FOREWORD BY
TIM HAYES, CMT, JOE KALISH,
AND LANCE STONECYPHER, CFA

BEING RIGHT
or
MAKING MONEY

NED DAVIS

Ned Davis Research Group

WILEY

Being Right or Making Money

Being Right or Making Money

Third Edition

NED DAVIS

WILEY

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Foreword

TIM HAYES, CMT
JOE KALISH
LANCE STONECYPHER, CFA

We knew nothing about sleepy Venice, Florida, and only one of us knew about the investment research company that Ned Davis started in 1980. Tucked away on a quiet street near a tired strip mall that had been ravaged by a tornado a year earlier, NDR's two small houses appeared sparsely occupied when we started in 1986. The company employed about 15 people.

As we gradually learned about computer-threatening lightning strikes and other surprises of working in southwest Florida, we also started to learn more about the founder's philosophy and approach to investing. Knowing little about market behavior, we listened to Ned carefully as he pored through his chart pile at weekly research meetings, anxious about the inevitable market questions that he would fire our way.

It wasn't long before our minds started filling with phrases that to this day remain crucial to successful investing: *Don't fight the tape*, *don't fight the Fed*, and *beware of the crowd at extremes*. We learned about behavioral finance long before it became a common term in the investment world.

While Ned would employ his red pen to raise questions about our research, he would also use it to circle data points in the past with similarities to market conditions of the present, in the process demonstrating the importance of understanding history. Along with his emphasis on clean data and historical analysis, Ned stressed reliance on indicators and composite models to support an investment approach that's objective, flexible, disciplined, and risk aware. His tenets would come to be known as Ned's Nine Rules of Research, which he discusses in the first two chapters of this book.

Ned has always encouraged independent thinking. Even early on he was open to whatever market calls we wanted to make as long as they were supported by the objective weight of the evidence. As the firm expanded, Ned encouraged and enabled us to expand our respective research areas and develop our strategy teams, all the while producing commentary and research tools based on his research guidelines. These guidelines helped us navigate through three decades of bull and bear markets, economic expansions and recessions, peacetime and war, euphoria and panic, and bubbles and crashes. We learned that market survival requires humility and respect for an entity—the market—that demonstrates an amazing ability to surprise, time and time again. Ned has often called investing "a game of making mistakes," adding that "the difference between the winners and the losers is that the losers make the big mistakes while the winners cut their losses short."

In terms of size and global recognition, the NDR of today bears little resemblance to the NDR of 1986. Now in a bigger facility, the Venice office employs more than 100 people, with nearly half in research. Sales offices can now be found in Boston, San Francisco, Atlanta, and London, and service a client base of more than 1,200 client firms in 43 countries around the world. From the early days when the product consisted of a printed chart book and Ned's comments on a recorded call, it has expanded to include a custom research team that builds indicators and models for clients, plus nearly 20 different authors covering macro and market conditions, commodities and currencies, sectors and sub-industries, ETFs, and individual stocks in countries around the world.

The breadth of topics and depth of coverage are exemplified by the last two chapters of the book, in which Alejandra Grindal discusses the implications of demographic changes and John LaForge focuses on prospects for U.S. energy independence. Loren Flath, who joined NDR even earlier than we did, explains in Chapters 3 and 4 how NDR's technology developments have supported the evolution of our modeling and research efforts.

Certainly a lot has changed since we started in 1986, such as the proliferation of data available over the Internet. But what hasn't changed is the time-tested research philosophy that Ned discusses in the pages that follow. It has continued to underpin the product development and analysis that has kept us on the right side of major market moves and investment themes.

Preface

Why write a new edition of *Being Right or Making Money*?

The short answer is that I always feel that I can improve my work. However, though I have updated the philosophy chapter from the previous editions with some new facts and quotes, the only major change is the evolution of my belief that the most successful money managers are risk averse. While it might seem that many of the big winners since 2000 have been risk takers, I still contend that those who consistently succeeded were successful risk managers.

This book is mostly about making money, but that is not my only focus. I try to understand the world and educate myself about the issues affecting it. I have thought about a quote from Eleanor Roosevelt many, many times. She said, "Great minds discuss ideas, average minds discuss events, small minds discuss people." In that spirit, I spend much of my time researching and learning about ideas. Among my current passions: new research data, techniques and indicators, energy fracking, health care and biotech, demographics, the Middle East and other areas of geopolitical conflict, the implications of fascinating new technology in cars and electronics, secular trends, the European Union, debt problems, and domestic politics. So many factors can impact the economy and investments.

I'm fortunate that I no longer need to work to make a living, but I still find it exhilarating to be paid to continue my education and stimulate my mind. I am so grateful. This is a fascinating business! My hope is that this book will inspire discussion about important issues, such as demographics, the energy revolution, and potential investment risks.

Acknowledgments

While the 45 years I have dedicated to my work have been very fulfilling, much of my joy comes from my family: Mickey, Evan, Ben, Brody, Dylan, Connor, and Lisey.

I am fortunate to be surrounded by talented and dedicated colleagues at Ned Davis Research, but I want to offer special thanks to my extraordinary team: my executive assistant Leslie Kahoun; my senior research assistant, Loren Flath, who was largely responsible for building the models described in Chapters 3 and 4; my research assistants Stephanie O'Brien and London Stockton; and Julie Meyers, who also helps edit my work.

Thanks to two of our outstanding up-and-coming strategists—senior international economist Alejandra Grindal and commodity strategist John LaForge—for authoring Chapters 6 and 7.

There are now more than 100 employees at Ned Davis Research. We are dedicated to quality products and customer service. I appreciate all their efforts and support.

Being Right or Making Money

CHAPTER 1

Being Right or Making Money

NED DAVIS

BAD NEWS ABOUT FORECASTING (BEING RIGHT)

Later in this book there are several chapters about factors—including a potential cyclical bear market, demographics, and the U.S. energy renaissance—that could be game changers, and might help forecast the future. I hope you will find the perspectives useful, even though after studying forecasting for over 40 years I realize I do not always know what the market is going to do.

You may have heard of the Texan who had all the money in the world but who had an inferiority complex because he felt he wasn't very bright. When he heard about a brilliant doctor who was offering brain transplants, he immediately consulted him to find out if it were true and how much it would cost. The doctor told him it was indeed true that he could boost intelligence quotient (IQ) levels. The doctor had three types of brains in inventory: lawyer brains for $5 an ounce, doctor brains at $10 an ounce, and stock-market guru brains for $250 per ounce. The Texan asked, "Why in the world are the stock-market guru brains so much more expensive or valuable than those of doctors or lawyers?" And the doctor replied, "Do you have any idea how many gurus it takes to get an ounce of brain?"

People laugh at that joke because unfortunately there is a lot of truth to it. I don't know in what direction the markets will go, and neither does Janet Yellen or Barack Obama. Even George Soros, whose modest $1 billion take-home pay of a few years ago qualifies him as a bona fide market guru, says in his book *The Alchemy of Finance*,[1] "My financial success stands in stark contrast with my ability to forecast events . . . all my forecasts are extremely tentative and subject to constant revision in the light of market developments."

While 95 percent of the people on Wall Street are in the business of making predictions, the super successful Peter Lynch, in his book *Beating the Street*,[2] says, "Nobody can predict interest rates, the future direction of the economy, or the stock market. Dismiss all such forecasts. . . ." And as Mark Twain once observed, "The art of prophecy is difficult, especially with respect to the future."

I think it was Alan Shaw, one of the more successful practitioners of technical analysis, who said, "The stock market is man's invention that has humbled him the most." Fellow legendary technician Bob Farrell warned, "When all the experts and forecasts agree—something else is going to happen."[3]

Economist John Kenneth Galbraith put it this way, "We have two classes of forecasters: those who don't know and those who don't know they don't know."

Financial theorist William Bernstein described it similarly, but with an even darker message: "There are two types of investors, be they large or small: those who don't know where the market is headed, and those who don't know that they don't know. Then again, there is a third type of investor—the investment professional, who indeed knows that he or she doesn't know, but whose livelihood depends upon appearing to know."[4]

Despite my realization that forecasting is difficult, I haven't become a spoilsport and turned away from predicting the market's course entirely, because I've had my share of really good forecasts. Perhaps recounting how I came to distrust "being right" and instead embraced techniques that allowed me to make money consistently will be helpful.

Like nearly all novice investors and analysts, back in 1968 I was convinced that all I had to do was discover the way the investment world worked, develop the best indicators available to forecast changes in the markets, have the conviction to shoot straight, and gather my profits. And my record of forecasting stock prices from 1968 to 1978 was so good that during a *Wall $treet Week* broadcast in 1978 Louis Rukeyser said, "Ned Davis has had an outstanding record in recent years . . . and has been absolutely right about most of the major ups and downs. . . ."

The only problem was that at the end of each year, I would total up my capital gains and unfortunately I would not owe Uncle Sam much money. Before someone else could question me, I asked myself, "If you are so smart, why aren't you rich?" It was about that time (1978–1980) that I began to realize that smarts, hard work, and even a burning desire to be right were really not my problems, or the solution to my problems. My real problems were a failure to cut losses short, a lack of discipline and risk management, letting my ego color my market view (which made it difficult to admit mistakes), and difficulty controlling fear and greed. *It was thus a lack of proper investment strategy and good money management techniques, not poor forecasting, that was holding me back.*

I dealt with those problems, and by 1985 *Barron's* magazine was interviewing me and saying on its cover: "No Bum Steers from This Raging Bull: Ned Davis Has Been Dead Right on the Market."

Over the years I have seen scores of very bright investment advisors turn into hugely successful gurus who blaze into the investment business with spectacular forecasts. Yet, I've watched each and every one of them crash back to earth when a big subsequent forecast inevitably proved wrong. The Bible says, "Live by the sword, die by the sword." As my late friend Marty Zweig and I watched these forecasting gurus fail, we often said to each other, "Live by the forecast, die by the forecast."

Before examining indicators, I'd like to discuss the record of some professional forecasters. Perhaps the biggest myth in financial markets is that experts have expertise or that forecasters can forecast. The reality is that flipping a coin would produce a better record. Therefore, relying on consensus economic forecasts to provide guidance for investment strategy is almost certain to fail over the long run.

What is my evidence? Consider forecasts from the Survey of Professional Forecasters released by the Federal Reserve Bank of Philadelphia and shown in Figure 1.1 (solid line). The dashed line shows real GDP. The chart shows seven recessions (shaded zones) since 1970. As a group, professional economic forecasters did not correctly call a single one of these recessions. In fact, they have never predicted a recession, period. Since the first edition of *Being Right or Making Money* was published in 2000, on average economists have been 59 percent too high in their 12-month forecasts (predicted growth: 3.1 percent; actual growth: 1.9 percent).

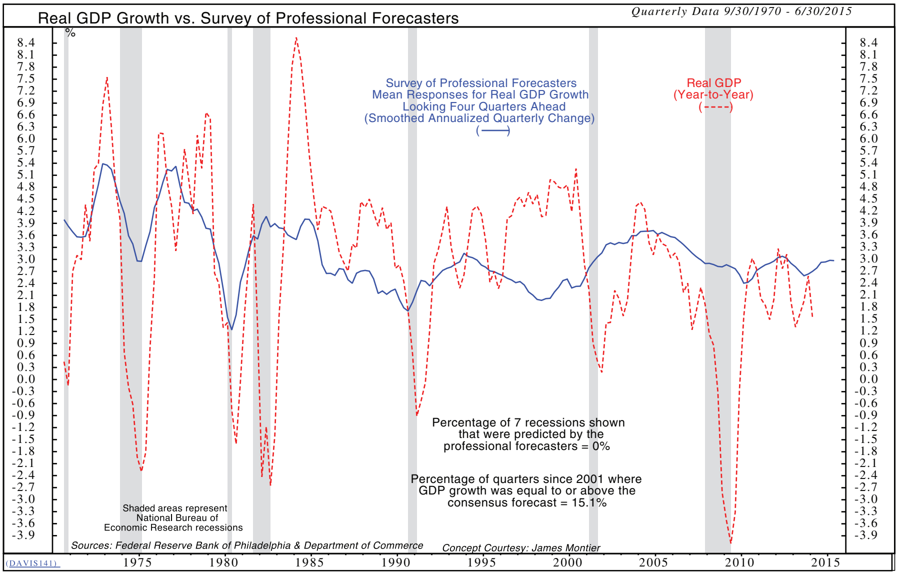
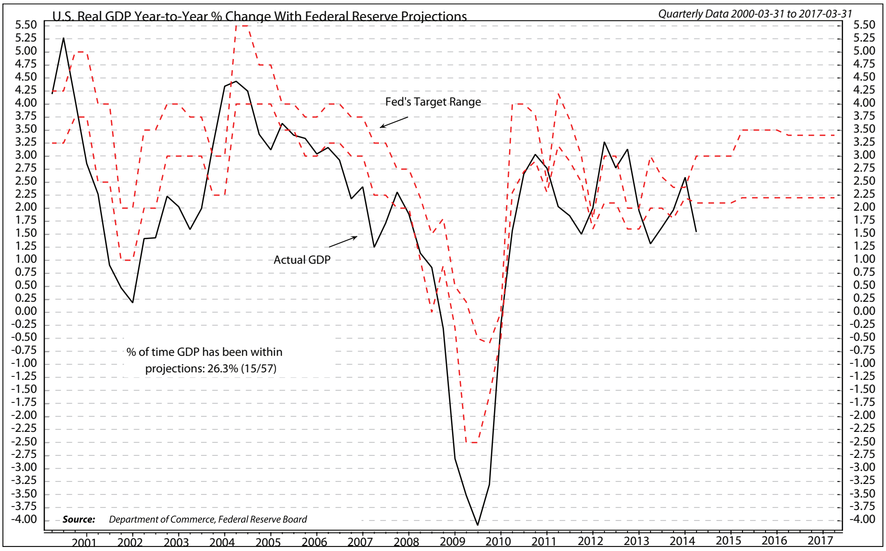


FIGURE 1.1 **REAL GDP GROWTH VERSUS SURVEY OF PROFESSIONAL FORECASTERS**

Well, what about the experts at the Federal Reserve? They are supposed to be independent. They have a lot of money to spend on research, a full professional staff, and they have expanded their projections from a year or so to five years ahead. Two years ago the initial projection for 2013 was 4.15 percent real growth. In Figure 1.2 we plot the wide range of projections by the Fed (not the central tendency or specific point forecast) and then see how real GDP performed since 2000. And as shown, the Fed was actually correct (actual GDP fell within the Fed's wide range) just 26.3 percent of the time!

The last word I'll offer on predictions is from the Fed's leader during much of the period covered by the chart. In October 2013 Alan Greenspan said, "We really can't forecast all that well. We pretend we can, but we can't."

Forecasting the economy and the investment markets consistently and reliably is very difficult. In fact, consensus predictions often contain the seeds of their own destruction by altering human actions. Most crowds are usually wrong at sentiment extremes as I will discuss later in this chapter.



Source: *Department of Commerce, Federal Reserve Board*

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FIGURE 1.2 **REAL YEAR-TO-YEAR PERCENTAGE CHANGE IN U.S. GDP VERSUS FEDERAL RESERVE PROJECTIONS**

GOOD NEWS ABOUT MAKING MONEY

After studying winners in the investment world over many years, I found some good news. While *nobody was right* year in and year out, a number of advisors and investors did in fact *make money* year in and year out. I decided I would follow their advice on how to make money consistently.

In 1980 I acquired a computer and a good program, and started building timing models that I felt would give me the objectivity, discipline, flexibility, and risk management that I needed to make consistent profits. And since 1980 the Ned Davis Research Group has been dedicated to building timing models that do not forecast, but are simply designed to make money. These models have made a real and substantial change in my investment profits, and both Uncle Sam and I are now much better off. As far as my forecasting of the market goes: if anything, it suffered. Timing models that make money invariably are less cocky than a crystal-ball guru. The models are so concerned with minimizing disastrous risks that they try to hit singles and doubles rather than home runs. And they definitely limit the number of strikeouts.

Again, my financial well-being improved significantly, and the humility and discipline that the timing models forced upon me relieved me of a lot of stressful anxiety. I shifted my focus from gaining glory and prestige to designing a business focused on making money while managing risk.

Timing models have permitted me to make money on a more consistent basis. Throughout my career I have followed a number of renowned market winners, and though their methods do not all include timing models, these winners share certain investment-strategy characteristics that we have tried to incorporate into our models.

I found winners such as Marty Zweig, Dan Sullivan of *The Chartist*,[5] and Value Line,[6] who have consistently made money since 1980 (according to Mark Hulbert, who rates advisors). I found investment legends who consistently win, including John Templeton, Warren Buffett, Peter Lynch, George Soros, Stan Druckenmiller, Paul Tudor Jones, Bill Gross, and Jim Stack. What commonalities do these winners share?

Being Right and Other Investment Techniques Are Overrated and Are Not the Keys to Success

It's not the markets they trade or even the techniques they use. These are people who rely on different philosophies, ranging from Ben Graham's long-term valuation techniques to in-and-out technical commodity trading . . . from dollar-cost averaging to market timing . . . from buying high-yielding stocks to buying relatively strong stocks with almost no yield. Clearly, a variety of techniques can make money. I find it exciting that numerous techniques can make money, as investors can choose the technique that best fits their own psyches.

The winning methods of successful professional investors are even sometimes contradictory. For example, in the book *Market Wizards*[7] the successful pro Jim Rogers is quoted as saying that he often examines charts for signs of "hysteria," and also that "I haven't met a rich technician." In the same book an equally successful pro, Marty Schwartz, is quoted as saying, "I always laugh at people who say, 'I've never met a rich technician.' I love that! It is such an arrogant, nonsensical response. I used fundamentals for nine years and then got rich as a technician." If you think that is confusing, in the book *What I Learned Losing a Million Dollars*[8] the legendary

John Templeton is quoted as saying, "Diversify your investments." In the same book, the equally legendary Warren Buffett says, "Concentrate your investments. If you have a harem of forty women, you never get to know any of them very well."

So as I studied other long-term winners on Wall Street, I found that instinctively or otherwise, they had come to the same conclusions that I had. While the methods of Warren Buffett, Peter Lynch, and John Templeton are very different from my risk-management, asset-allocation, market-timing orientation, all of these men have been exceedingly humble, made multiple mistakes, and rarely (if ever) get headlines about a spectacular call. Yet they all use objective methods for picking stocks, their investment philosophy is disciplined and designed to limit risks, and they are flexible when they must be.

This book is not designed to challenge those of you who are long-term fundamentalists or short-term technicians. Instead, we offer some tools that hopefully will help you to be more right more often. But much more importantly, this book will show you that being right is not really where it's at, since at least as much of your focus should be on risk management, a disciplined strategy, and flexibility.

THE FOUR REAL KEYS TO MAKING MONEY

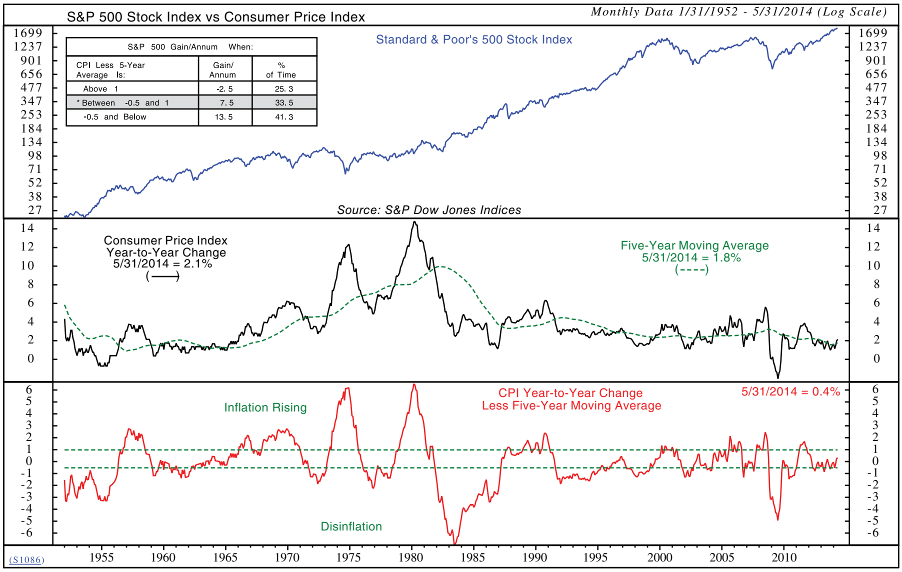
As I continued studying legendary investors, I discovered that all of these winners shared four key characteristics, some of which I had already learned by the time I completed kindergarten.

1. **OBJECTIVE INDICATORS:** These legendary investors all used ***objectively determined indicators*** rather than gut emotion. We have a little riddle about this. In a room there were three people: a high-priced lawyer, a low-priced lawyer, and the tooth fairy. In the middle of the room was a $100 bill. Suddenly the lights went out, and when they came back on the $100 bill was gone. Who took it? The answer, of course, is the high-priced lawyer—because the other two are figments of the imagination. We want to make sure that what our indicators say is factual and not a figment of our imaginations. As our teachers tried to help us understand in kindergarten, it is critical to learn what is real and what is imaginary.

What is an objective indicator? It must be mathematical, with long historical analysis to demonstrate its effectiveness. One example might be the rate of inflation. Perhaps it is because the Fed is supposed to control inflation, or perhaps it is because bond yields have an inflation premium, but inflation is one of the best macroeconomic indicators to use to call the stock market.

But in all of the noisy data, how much does inflation need to rise or fall on a monthly basis to be important? The chart in Figure 1.3 looks at the year-to-year rate of inflation relative to a five-year moving average. In the 41.3 percent of the time since 1952 that the year-to-year inflation rate was at least 0.5 of a percentage point below the five-year average, the S&P 500 shot up at a 13.5 percent annual rate—almost double the 62-year buy-and-hold average of 7.2 percent. And when inflation was more than one percentage point above the five-year average, one actually lost money in stocks.

2. **DISCIPLINE:** All the winners are very ***disciplined***, remaining faithful to their systems through good and bad times. I sometimes



S&P 500 Gain/Annum When:

CPI Less 5-Year Average Is:	Gain/ Annum	% of Time
Above 1	-2. 5	25. 3
* Between -0.5 and 1	7. 5	33. 5
-0.5 and Below	13. 5	41. 3

Source: S&P Dow Jones Indices

FIGURE 1.3 S&P 500 INDEX VERSUS CONSUMER PRICE INDEX

compare investing to classical Greek tragedies, in which the hero is inevitably ruined by some character flaw. My own biggest flaw in investing, as noted earlier, is letting my ego get involved in my market view. This makes it very difficult to admit mistakes. Thus, to shift from concentrating on being right to making money, I had to learn discipline. That is how I came up with the idea of using computer-derived mathematical models for stock-market timing that would *force* discipline upon me. That discipline may not have made me more right over the past 40 years, but it did control my mistakes and allowed me to be a much more successful investor. In June 1998 Dan Sullivan said in his *The Chartist* newsletter, "Successful investors have several things in common. First, they have patience. Second, successful investors are like great athletes, they adhere to a strict discipline." As my teacher taught me in kindergarten, there will be chaos if you don't have discipline.

3. **FLEXIBILITY:** While disciplined, these winners were ***flexible*** enough to change their minds when the evidence shifted, even if they did not understand why. In his book *Winning on Wall Street*,[9] Marty Zweig talks about how bearish he was during a sell-off in February and March 1980: "I was sitting there looking at conditions and being as bearish as I could be—but the market had reversed. Things began to change as the Fed reduced interest rates and eased credit controls. Even though I had preconceived ideas that we were heading toward some type of 1929 calamity, I *responded* to changing conditions." In conclusion he states, "The problem with most people who play the market is that they are not flexible . . . to succeed in the market you must have discipline, flexibility, and patience."

Barton Biggs once called Stan Druckenmiller "the investment equivalent of Michael Jordan. . . . He is the best consistent macro player." Biggs said, "He is a combination of being very intellectual and analytical, but also using technical analysis." In *Market Wizards*, author Jack Schwager writes of Druckenmiller:

> Another important lesson . . . is that if you make a mistake, respond immediately! Druckenmiller made the incredible error of shifting from short to 130 percent long on the very day before the

> massive October 19, 1987, stock crash, yet he finished the month with a net gain. How? When he realized he was dead wrong, he liquidated his entire long position during the first hour of trading on October 19 and actually went short. . . . The *flexibility* [emphasis added] of Druckenmiller's style . . . is obviously a key element of his success.

So as I learned in kindergarten: expect surprises. Things change.

4. **RISK MANAGEMENT:** Finally, all of these successful investors were ***risk managers***. I asked Paul Tudor Jones once what he does at work all day, and he answered, "The first thing I do is try to figure out what is going to go wrong, and then I spend the rest of the day trying to cover my butt." In *Market Wizards*, Paul says, "I am always thinking about losing money as opposed to making money." And he is widely known as a risk taker!

Nearly all of the pros I have studied are clear about one thing: *they want to control their losses*. In *Market Wizards*, fundamentalist Jim Rogers says, "Whenever I buy or sell something, I always try to make sure I'm not going to lose any money first . . . my basic advice is don't lose money." In the same book, technician Marty Schwartz says, "Learn to take the losses. The most important thing in making money is not letting your losses get out of hand." In his book, *Pit Bull*,[10] Schwartz says, "Honor thy stop . . . exiting a losing trade clears your head and restores your objectivity." Controlling losses is one lesson I wished I had learned in kindergarten. They did tell me to be careful, but it wasn't until much later that it sunk in. I learned this from Warren Buffett, who once stated his two favorite rules for successful investing: Rule #1: Never lose money. Rule #2: Never forget Rule #1. In *What I Learned Losing a Million Dollars*, the legendary Bernard Baruch is quoted as saying, "Don't expect to be right all the time. If you have a mistake, cut your loss as quickly as possible."

In *Reminiscences of a Stock Operator*,[11] the hero (widely believed to be the legendary trader Jesse Livermore) says, "A loss never bothers me after I take it. I forget it overnight. But being wrong—not taking the loss—that is what does the damage to the pocketbook and to the soul." Echoing that sentiment, Druckenmiller in *The New Market Wizards*[12] says of George Soros,

"Soros is also the best loss taker I've ever seen. He doesn't care whether he wins or loses on a trade. If a trade doesn't work, he's confident enough about his ability to win on other trades that he can easily walk away from the position." Finally, the last word on the subject of taking losses (and making money) goes to Leo Melamed, chairman emeritus of the Chicago Mercantile Exchange. In the book *The Inner Game of Trading*,[13] in response to the question, "What do you think are the primary psychological barriers that prevent most traders from being successful?" Leo answered: "One of them is the ability to take a loss. You've got to know that no risk taker is going to be right all the time. As a matter of fact, I figured out when I was trading that I could be wrong 60 percent of the time and come out a big winner. The key is money management. You must take your losses quickly and keep them small and let your profits run and make them worthwhile. . . ."

In the December 12, 2013, edition of *The Chartist Mutual Fund Letter* was a list of seven insights from John Bogle, founder of the Vanguard Mutual Fund Group, that I found helpful in making money. He says:

1. Balancing of return and risk is the task of intelligent investing.
2. Predicting stock-market returns has a very high margin of error.
3. Impulse is your enemy.
4. There is no escaping risk; a well-diversified portfolio should provide remarkable growth over the long term.
5. Investing is simple, but it is not easy. It requires discipline, patience, steadfastness, and common sense.
6. Be patient and ignore the crowd. If you can't resist temptation, you absolutely must not manage your own money.
7. The secret to investing is there is no secret.

So, in conclusion, what I've learned after all these years is that *we are in the business of making mistakes*. I've never heard Peter Lynch give an interview where he didn't point out some mistake he has made. And he has said, "If you are right half of the time (in the markets), you have a terrific score. It is not an easy business." So if we all make mistakes, what separates the winners from the losers? The answer is simple—*the winners make small mistakes*, while the losers make big mistakes.

The Battle for Investment Survival and Handling Mistakes

When I first became professionally involved in the stock market, a book by Gerald M. Loeb, who was called "the dean of Wall Street," made a big impression on me. The book is *The Battle for Investment Survival.*[14] I have battled in the marketplace daily for over 40 years and in my opinion Loeb was right—*investment survival* is everything. In 1994, the hugely successful George Soros said in his book *The Alchemy of Finance*, "If I had to sum up my practical skills, I would use one word: survival." He writes about how his father, who lived through the Russian Revolution as an escaped prisoner of war, taught his son "the art of survival." I don't think you need to be a prisoner of war to be successful on Wall Street, but I do think you often need to react as a survivor would.

In a recent *Business Week Investor* interview, successful money manager Michael Orkin said, "Have caution and respect for the market. The first job is survival."

I feel I have been a fairly high achiever in my life, and yet as I reflect on my successes, I also see failure after mistake after failure. Being a survivor means you must be able to handle these mistakes. I usually pick myself up and say: you have done the best you can; that's all you can ask of yourself—period, end of discussion. I also tell myself that failure is just the opportunity to start over with a lot of important new information. Another lesson I have learned during the ups and downs of my career is that when someone criticizes me, I let it go to my head because there may be something constructive I can learn from it. But I never ever let criticism go to my heart, where it can hurt me. Likewise, when people compliment me, I let it go to my heart, but I try not to let praise go to my head. Being caught up in the manic-depressive crowd psychology world of the stock market, it is important to have a balanced view of both successes and mistakes.

Here is a recent example of my personal struggle with making mistakes. On March 12, 2013, I authored a commentary *Hotline* entitled "Stubborn on Gold." I said:

> This is a commentary *Hotline*, as it is not my usual objective, disciplined analysis. As you know, I like to have both the Fed and the tape together to make a strong bet. I also look at sentiment and macro factors, like inflation.

> In the case of gold, I've largely lost the tape. Gold is in a major consolidation. It has not broken support around 1530, but it sure rallies poorly. I think it would need to break its downtrend line to get a more hopeful tape message. Moreover, while I think of gold as a currency hedge, history also argues it has served as an inflation hedge, and inflation has been very, very quiet. It may not stay quiet, but for now it is not at all a trigger for gold.
>
> So I am left with just the friendly Fed and some sentiment factors. Nevertheless, I am a little stubborn on gold, and I am convinced that it is going quite a bit higher in the long run . . . [due to Fed monetary-base growth] . . . my opinion is that a gold insurance position, relative to *global* money-printing, is still a prudent investment.

I bring up this mistake in hopes that eating some humble pie will prove a useful lesson. Even after 40 years in this business and preaching about being open-minded and disciplined, it is still very easy and very human, to fall into a stubborn desire to be right. Ouch!

In listing the personal qualities it takes to succeed in his book, *One Up on Wall Street*,[15] Peter Lynch does not mention being smart or being right, but rather he lists things like patience, persistence, humility, flexibility, and a *willingness to admit to mistakes*.

Paul Tudor Jones puts a positive spin on mistakes in *Market Wizards*, saying, "One learns the most from mistakes, not successes." He talks about a very intense gut-wrenching loss on a disastrous cotton trade he made early in his career, saying that his experience altered his whole trading style in terms of risk. He first called himself Mr. Stupid and said, "I am not cut out for this business; I don't think I can hack it much longer." But "that was when I first decided I had to learn discipline and money management. It was a cathartic experience for me, in the sense that I went to the edge, questioned my very ability as a trader, and decided that I was not going to quit. I was determined to come back and fight. I decided that I was going to become very disciplined and businesslike about my trading."

I have heard Paul tell another story that contains a critical message. He says that one time when he was trapped in a losing trade, he went to a pro for advice as to whether he should honor his stops. The pro said, "The markets are going to be here 20 and 30 years from now; the real question is, will you be?"

STORIES OF FIVE SUCCESSFUL WINNERS

I thought about calling this section of the book "Being Wrong and Making Money." My experience tells me investors will be right enough that the profits will take care of themselves (being right and making money), but the key is how you handle your losses and your mistakes. So I thought telling stories about five successful winners in the investment world might help illustrate the point. I talked about three of them in the previous edition of this book, when all were near the top of their fields. Also, all five are and were successful money managers who approach the market as I do, as a market timer or tactical asset allocator. All have been hugely successful on Wall Street. They are Marty Zweig, Paul Tudor Jones, Dan Sullivan, Chris Cadbury, and James Stack.

Before and during the 1987 crash, Marty Zweig was widely labeled as a prominent gloom-and-doomer due to his vocal warnings that there might be a 1929-style crash, followed by an economic depression. His forecasts were ubiquitous on television and in major media newsmagazines. I had talked to Marty several times during the crash, and if anything, he was more bearish than he was being portrayed.

Thus, I was surprised when a few days after the crash he told me he was going to turn all out bullish. I asked him why, given his concerns about a depression. He said, "I have spent the last 20 years of my life building indicators and most of them are flashing buys—what is the use of building them if you aren't going to follow them?" Thus, his keen mind was so *flexible* that he was able to forget his *deep-seated worries* and follow his indicator rules, correctly turning bullish very quickly. This kind of flexibility, an ability to let his prior stance be and thus shift with the indicators, made Marty one of the top investment advisors from July 1980 until he quit publishing his investment newsletter in December 1997. He never had a down year. When I asked Marty why he changed a position, he simply said, "I'm just trying to stay out of trouble." He turned his nervous, worrying nature into a profitable risk-management virtue. To sum up, Marty was hardly ever 100 percent in or out of the stock market, rarely forecasted where stocks were going, rarely achieved the number one advisory spot in a single year, only took small risks, and paid a lot of commissions since he often shifted his stance. Yet over the long run, he ended up well ahead of other advisors and many hedge funds.

As for Paul Tudor Jones, $1,000 invested in his Tudor Futures Fund on September 18, 1984, would have been worth $669,670 on December 31, 2013, a gain of 668.67 percent in just over 29 years, or a whopping 24.8 percent per annum, perhaps one of the greatest money-management success stories ever achieved. The Tudor Futures Fund has *never* had a losing calendar year since its launch in September 1984. This record led *Barron's* to feature Paul in its year-end list of experts for many years. In a *Barron's* Roundtable discussion at the start of 1989, Paul was quoted as being very bearish on both the U.S. stock market ("The fact is I think the stock market is a low-risk short.") and the Japanese market ("I couldn't sleep at night if I were long the Japanese market.") However, he was very wrong on both counts (although a year later, his call on Japan proved prophetic). But this super speculator was so good at money management, flexibility, and cutting losses short, and so adept at being objective and disciplined, that he ended 1989 making 42 percent for his investors and returning some $200 million to his partners.

Lest you think that was a fluke, Paul spoke at a Ned Davis Research (NDR) investment conference in early 1991. His number one trade for the year was to short the Dow and buy gold. Again, he was wrong. Paul recently told me *the* reason for *all* the Wall Street success stories he knew was clear—"money management, money management, money management." I am certain that Paul has been right many times and has made much money when he was right, but these stories show that the top pros can be wrong and still make money!

The Chartist has been highly ranked by the *Hulbert Financial Digest*[16] for returns for over 21 years. In a letter, Dan Sullivan, *The Chartist*'s editor, once said:

> For the year-to-date, the Actual Cash Account, which buys and sells in sync with our consensus Model, has lost $22,525, –3.71 percent. The Aggressive Account has lost $12,849, –6 percent. . . . To be absolutely candid, the losses we have sustained, given the high standards we have always set for ourselves, border on disastrous. . . . While no one enjoys taking losses, there are times when to do so is absolutely essential. One of the main planks in our stock-market methodology is the preservation of capital. This involves taking losses quickly, before they become unmanageable.

The September 12, 2013, issue of *The Chartist* newsletter listed four negative behaviors and attitudes that can lead to poor investment returns:

1. Failing to take losses.
2. Being overly fearful at market bottoms and overly optimistic at market tops.

3. Failing to take responsibility for your own money.
4. Not following a disciplined strategy.

And it has worked. *The Chartist Mutual Fund Letter* (February 13, 2014) says:

> The Actual Cash Account now stands at $1,327,947, still another record high on a monthly basis. Per our usual policy, a month-by-month performance of the Actual Cash Account since its inception is available to any subscriber. The Actual Cash Account has outperformed the benchmark S&P 500 with dividends factored in since we started it with an original $100,000 back in August of 1988. What we are most proud of is the fact that the profitable results have been accomplished with considerably less risk than buy and hold because this real money account has the ability to move to the sidelines during adverse periods. We are using basically the same methodology that we deployed when we started this newsletter some 25 years ago. It has stood the test of time.

Since our philosophy is somewhat like Sullivan's, I'd like to quote a few of the things he has written. On January 17, 1991, after having just sold a group of stocks at a loss and before correctly turning bullish again to catch the 1991 bull market, Sullivan observed:

> Here's what you get with *The Chartist*. We are not going to be right all of the time, but be assured that we back our recommendations with our own money. We're not going to ask our subscribers to take any risks that we are not willing to take ourselves. When we are wrong, we are going to admit it flat out. You're not going to see us loaded up with a portfolio of losing stocks for an extended period of time, hoping that the market is going to bail us out.
>
> As stated previously, our philosophy is to cut losses quickly. At the outset of a buying campaign, we think 'short-term'. If the stocks we select are not living up to their expectations, we act quickly to cut losses. However, once we find ourselves on the profit side of the ledger, you will not find us all that anxious to sell. In essence, we are quite willing to risk paper profits. Most investors are too slow to cut losses and too quick to take profits, which is the exact opposite of our approach to the market.
>
> The market is going to be there tomorrow and it will present us with many opportunities in the future. It is not the slightest blow to our ego or self-esteem to tell you that our timing was off the mark. We were wrong. But, that is how we do it here at *The Chartist*.

Winners like Dan Sullivan are very flexible and very disciplined, and they're risk managers. While I am not trying to knock the importance of study, hard work, and being right in terms of investment success, the key is how to make money. My own strategy choices are explained in Chapters 2 and 3 of this book. If you choose not to follow my exact rules, or even if you decide to throw out market timing altogether, I still believe that objectivity, flexibility, discipline, and risk management are the keys to making money, and this book can help your understanding of the importance of those factors.

I am including two advisors who did not appear in the last edition. Only one is still practicing. But I wanted to include both because their general approach is similar to mine. Again, I am not trying to push my investment strategy on anyone. It just so happens that I have the psyche of a hedge-fund trader, and so I sought out winners who used tools similar to those I use to make money consistently.

The differences between Chris Cadbury and Jim Stack are striking. Cadbury's approach was very short-term, and Stack's is more cyclical. Cadbury, who recently retired, was more focused on mean reversion, sentiment, and overbought/oversold indicators, while Stack is more technical-trend and macro-oriented. Personally, I try to fuse all of these factors. Yet, both have made money by cutting risks short and letting profits run.

Cadbury was ranked number one in the United States by *Timer Digest* at some point each year from 2002 to 2011, according to the one-year performance metrics used by that publication. He had more than 45 years of trading experience. In 2011 *Timer Digest* said:

> In terms of performance, as measured by *Timer Digest*, Chris Cadbury has distinguished himself across multiple time horizons and in response to various market environments.
>
> He ranked No. 1 for both 5- and 10-year periods ending on December 31, 2010, as well as No. 2 for 3 years and No. 3 for 8 years. Over the 10-year horizon, the market has essentially gone nowhere. And within that time period, there have been several difficult bull and bear cycles to negotiate.

When the market gets oversold and excessive pessimism exists, Cadbury likes to go contrary to sentiment extremes with buy signals. But once he buys (for example, the S&P 500 futures), he generally sets a five-point stop-loss. I have seen him be wrong with several five-point losing trades in a row, but he will stay with his indicators. I've seen him go from three or four small losses to a 100-point gain. Cadbury is also quite flexible. He can lean bearish for an extended period (1987 and 2007–2008) and then flip and lean bullish (since 2009). This flexibility is rare for market-letter writers.

Jim Stack publishes a newsletter called *InvesTech Research* and conducts his research from Whitefish, Montana, far from the maddening crowd on Wall Street. He uses objective indicators, historical research, and a disciplined safety-first approach to investing that has been successful for over 30 years.

Besides "objectivity," Stack lists "humility" and "integrity" as fundamental principles for survival in this business. Mark Hulbert rates Stack as a market timer, but Stack prefers to think of himself as more of a risk manager (as I prefer to think of myself). Stack says:

> The April [2013] issue of the *Hulbert Financial Digest* released its latest Stock Market Timers Honor Roll. As described by Mark Hulbert, making it onto their honor roll requires producing above-average performance in both up and down markets.
>
> In our view, managing risk through portfolio and sector allocation isn't the same as market timing, so we don't consider ourselves to be market timers. Yet we are honored to be included in the 4 percent of advisors who made this respected list. In the performance Scoreboard of the same issue, the InvesTech Research Portfolio Strategy was the only service to make it into the top five in risk-adjusted ranking over the past 5-, 10-, and 15-year time periods.[17]

While Cadbury and Marty Zweig both used stop-loss strategies effectively to move into cash and manage risks, Jim Stack does not use published stops and feels he manages risks simply by following his indicators in a disciplined, patient manner. He basically uses the trend as a stop-loss. I saw him turn mostly optimistic too soon, before the 2009 lows, but he maintained his position, thanks to numerous historical studies that showed an "upcoming buying opportunity of a lifetime."[18] Again, after seeing him squirm in the tumultuous year of 2012, I thought his description of risk management was insightful and useful:

> Managing risk will be increasingly important as this bull market matures. But risk management does not mean jumping into a high-cash position every time fearful headlines appear or one becomes nervous because of a market correction. If that was the case, one would have moved to cash and been whipsawed at least four times since this bull market began.

> Managing risk requires setting aside one's emotions and relying on discipline. That's easy to say, but very difficult to do without time-tested technical models and extensive historical knowledge. This bull market, like every predecessor, will someday draw to a close. And while there are no guarantees, we are confident that our tools and 33 years of analytical experience will help us recognize the warning flags when they start to appear.

Objective risk management can take different forms, but it works.

MAKING OUR OWN REALITY

I've often wondered why the crowd and popular forecasts are so often wrong. My favorite theory is that crowd psychology and liquidity (potential demand) are inversely related. For another explanation, in the foreword to Charles Mackay's book *Extraordinary Popular Delusions and the Madness of Crowds*,[19] the legendary Bernard Baruch says that "all economic movements by their very nature, are motivated by crowd psychology. . . . Without due recognition of crowd thinking (which often seems crowd-madness) our theories of economics leave much to be desired." But listen to how he views crowd thinking, "Schiller's dictum: Anyone, taken as an individual, is tolerably sensible and reasonable—as a member of a crowd, he at once becomes a blockhead."

Baruch, who wrote this foreword in October of 1932, prescribes a "potent incantation" to use against crowd thinking:

> I have always thought that if, in the lamentable era of the "New Economics," culminating in 1929, even in the very presence of dizzily spiraling prices, we had all continuously repeated, "two and two still make four," much of the evil might have been averted. Similarly, even in the general moment of gloom in which this foreword is written, when many begin to wonder if declines will never halt, the appropriate abracadabra may be: They always did.

Some other quotes I like regarding crowds, reality, and human nature are these:

Jonathan Swift: "Truths languish, while myths flourish."

Bennett Goodspeed: "Man is extremely uncomfortable with uncertainty. To deal with his discomfort, man tends to create a false sense of security by substituting certainty for uncertainty. It becomes the herd instinct."

Edwin LeFèvre, *Reminiscences of a Stock Operator*: "The speculator's chief enemies are always boring from within. It is inseparable from human nature to hope and to fear."

Or as Shakespeare put it in *Julius Caesar*: "The fault, dear Brutus, is not in our stars / But in ourselves, that we are underlings." Or as Pogo said, "We have met the enemy and they are us."

Additionally, I have become fascinated with the concept that we all *create our own realities*.

An important truth is that people will view reality according to how they *want* to perceive it or believe it *should be*. I found a powerful illustration of this principle in a human-relations class I was taking, in which we read a quote from a long-serving warden of New York's infamous Sing Sing prison. According to the warden, "Few of the criminals in Sing Sing regard themselves as bad men. They are just as human as you and I. So they rationalize, they explain. . . . Most of them attempt by a form of reasoning, fallacious or logical, to justify their anti-social acts even to themselves . . . the desperate men and women behind prison walls *don't blame themselves for anything*." *Rationalization is a powerful coping mechanism.*

People who seemingly *have to* gamble provide another good example of the human tendency to create our own realities. Despite the fact that casinos make hundreds of millions of dollars every year, I've almost never met a gambler who claimed to have been a loser. Gamblers will look you straight in the eye when they tell you that. It is my belief that the pain of losing is so great, they actually forget the losses. *Denial is a powerful defense mechanism.*

Yet another illustration: in listening to the sexual harassment testimony given during the Clarence Thomas confirmation hearing, I found that it was impossible for me to discern who was telling the truth and who was lying, but clearly, I believed, he or his accuser had to be lying. That is, until I heard a wise psychiatrist say that she thought that both of them were telling the truth. At least it was the *truth as far as each of them saw it. Illusion or delusion is a powerful psychological force.*

Some time ago I read a fascinating magazine interview with actor Ralph Fiennes, who played the evil Nazi Amon Goeth in the film *Schindler's List*. He said, *It's not a rational thing, but it's an instinctive thing*. . . . If you're playing a role, you are immersing yourself in thinking about that character—how he moves, how he thinks. In the end he *becomes an extension of your own* *self. You like him.* It just throws up all kinds of question marks about acting, about human behavior, about how evil is probably a lot closer to the surface than we like to think."

When asked whether there was an emotional residue from the experience of playing a character he views as obscene and sick, after a long pause Fiennes answered softly, "I think there was a price to pay for this one. When you're investigating behavior that is so negative, so intensely for three months, then you feel sort of peculiar because you might have at moments enjoyed it and at the same time you feel slightly soiled by it. . . . "[20]

A person's mind can sometimes get badly twisted under intense emotional pressure.

Then there's the O. J. Simpson case. Was he guilty? Two-thirds of whites said yes. Three-fifths of blacks said no. William Raspberry, the black Pulitzer Prize-winning journalist, asked: "How can that be? Are white people, less invested in Simpson's fate, being objective, while blacks are being emotional? Have we come to the point where color is of such importance as to override every other consideration, to render us, black and white, *incapable* of a *shared reality*?"[21]

The recent trial of George Zimmerman, a white man, for the death of Trayvon Martin, a black teenager, provides similar examples:

> *Washington Post*, July 22, 2013
>
> Among African Americans, 86 percent say they disapprove of the verdict—with almost all of them saying they strongly disapprove—and 87 percent saying the shooting was unjustified. In contrast, 51 percent of whites say they approve of the verdict while just 31 percent disapprove. There is also a partisan overlay to the reaction among whites: 70 percent of white Republicans but only 30 percent of white Democrats approve of the verdict.
>
> Gallup, April 5, 2012
>
> U.S. public opinion about the Trayvon Martin case in Florida reflects the same type of racial divide found in 1995 surveys asking about the murder trial of O. J. Simpson in Los Angeles. In one Gallup poll conducted Oct. 5–7, 1995, for example, 78 percent of blacks said the jury that found Simpson not guilty of murder made the right decision, while only 42 percent of whites agreed.
>
> Pew Research Center poll, July 22, 2013
>
> Younger Americans express far more dissatisfaction over the Zimmerman trial verdict than do older Americans. Among those

> under 30, 53 percent say they are dissatisfied with the verdict and just 29 percent are satisfied. The balance of opinion is the reverse among those ages 65 and older: 50 percent are satisfied and just 33 percent dissatisfied.

Finally, as an avid basketball fan, my favorite example of imagination distorting reality comes while watching games. And I'm willing to admit to being guilty of succumbing to this particular distortion myself. Almost always, the vast majority of home fans at a game will swear that the referees favored the opposing team (many even proclaiming that the other team has paid off the refs), even though their home team won the game, and even though objective statistics generated by academics based upon NBA games show that if there is a bias, the calls in an average game favor the home team. Crowd psychology is contagious and can influence even what we see with our own eyes. *One's perception equals one's reality.*

So the bottom line is that *people often create their own realities*, based upon things that may have happened to them as far back as the very early years of life. We are all subject to that condition. We are human. This means what feels right and easy and obvious in your gut is quite often wrong.

The reason I believe people make their own realities and see and hear what they want to see and hear is not that they are not looking for reality, but rather that they are hardwired to have a certain nature. Shown a half glass of water, many people simply will describe it as half full while others insist it is half empty. A lot of us just get up in the morning as natural-born optimists or pessimists. On the other hand, I would probably look at the glass and ask, are we sure that is indeed water? I am a natural-born skeptic. One needs to know one's nature, but to make money consistently in stocks, one must also be able to be an optimist or a pessimist when the objective indicator evidence so dictates.

THE NED DAVIS RESEARCH RESPONSE TO ALL THIS

To avoid being swept up by the crowd, and to prevent our own reality from becoming badly distorted, we need an unbiased, objective standard that weighs the evidence and passes judgment devoid of emotionalism. In applying this concept to the financial markets, Ned Davis Research builds *objective, mathematical timing models*, which we believe are the best tools to overcome emotional rationalizations.

Ned Davis Research has two mandates—we are trying to make money and we are trying to stay out of big trouble. Thus, we tell our clients that the *art* of forecasting is something we do only for fun, but that making money is something about which we are serious, and we approach it in as *scientific* and *quantitative* a manner as is possible.

I like to think of *money management* today as similar to the beginning of the European Renaissance. While there were many invaluable contributions to the arts during that period from men such as Michelangelo and Rembrandt, much of what has shaped the world since then came from those who were bold enough to venture forward with scientific investigation, including da Vinci, Galileo, and Newton.

So while we are in an industry that often blends art and science, our preference is to have a strongly objective, scientific, and quantitative bias to our work.

Most technicians look at stock charts and see patterns that, unfortunately, exist only in the eyes of the beholder (just as many observers of art can find many different meanings in a painting). Most fundamentalists look at a company and profess to be able to envision earnings way into the future. We simply try to get into harmony with the impartial reality from the numbers (the weight of the evidence) available today.

TIMING MODELS

I developed my basic approach to the stock market when studying high school economics. The teacher said that prices are determined by supply and demand. So when I got into the business, I tried to focus on areas of analysis that give one clues about the forces that drive those variables. The three areas I found were the tape, the Fed, and crowd psychology.

Since prices are the equilibrium points between supply and demand, it follows that if prices are rising broadly, demand must be stronger than supply, and vice versa. Since it controls interest rates and the amount of money available, the Fed should never be ignored when trying to ascertain supply and demand. Likewise, extremes in crowd sentiment can tell us if demand is largely satisfied or if nervous holders of stock have mostly sold out.

In an effort to make money, we build timing models that we will explain in this book. But first, let's discuss five key rules we use when we build our models, which include the three areas that give clues about supply and demand.

The primary rule that we use in our models is something I modestly call Davis' Law.

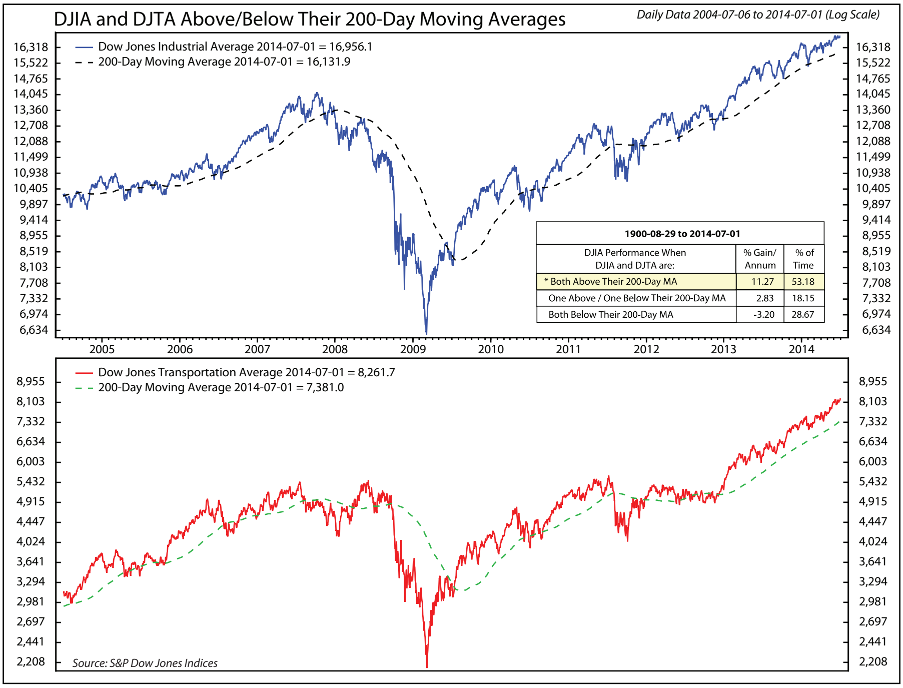
> Davis' Law
>
> The degree of unprofitable anxiety in an investor's life corresponds directly to the amount of time one spends dwelling on how an investment should be acting, rather than the way it actually is acting.

Rule No. 1. Don't fight the tape. We do not like to fight the harsh reality of the tape (market trend), and we try to get in harmony with the cold, bloodless verdict of the market. To enforce Davis' Law, our models are at least 50 percent price- or trend-sensitive, which we believe means we can never be fully invested during a vicious bear market or never miss the bulk of a roaring bull market.

As Marty Zweig said in *Winning on Wall Street*: "To me, the tape is the final arbiter of any investment decision. I have a cardinal rule: never fight the tape. . . . I'm a trend follower, not a trend fighter." We think our emphasis on trend- and price-sensitive indicators means that if we make a mistake, the trend will change and bail us out with a small mistake, and if we are right and it turns out to be a big move, we are almost guaranteed to get a good part of that large gain. In other words, dwell on the reality of market action rather than hopes, wishes, and imagination.

A key point on the tape/trend. In the 2010 edition of *Reminiscences of a Stock Operator*, there are some thoughts from Paul Tudor Jones. He talks about many of the disasters from the bubbles over the past decade or so, but he ends up with this conclusion: "The whole point of *Reminiscences* was that all of those very serious economic issues should be largely irrelevant to a great operator. Yes, they are interesting to debate, important to know, but always secondary to the tale the tape tells us on a continual basis."

Later in this book, we will feature many of the indicators in our timing models. But, in each section, I also wanted to illustrate what I am talking about through indicator examples that are not in the models. For example, Figure 1.4 looks at price trends in the Dow Jones Industrial Average (DJIA) and Dow Jones Transportation Average (DJTA). The results, shown in the box in the



1900-08-29 to 2014-07-01		
DJIA Performance When DJIA and DJTA are:	% Gain/ Annum	% of Time
* Both Above Their 200-Day MA	11.27	53.18
One Above / One Below Their 200-Day MA	2.83	18.15
Both Below Their 200-Day MA	-3.20	28.67

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FIGURE 1.4 DJIA AND DJTA ABOVE/BELOW THEIR 200-DAY MOVING AVERAGES

top clip, go back 114 years, to 1900. As can be seen, the market has advanced at double-digit rates of gain (dividends not included) in the 53 percent of the time demand was above supply, as measured by when both the DJIA and DJTA are above their respective 200-day average prices. One actually lost money on the DJIA when both were below their smoothed 200-day trend.

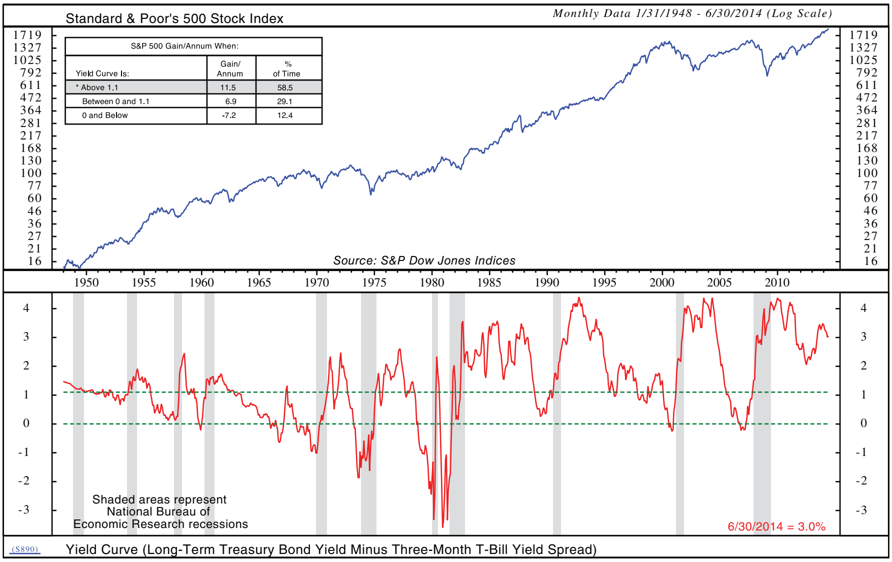
As I learned in kindergarten: don't pick fights with bullies (the tape).

Rule No. 2. Don't fight the Fed. We are not pure technicians. Why stand on one foot, when two feet give you better balance? So we also try not to fight city hall—the Federal Reserve Board. The Fed often writes the script for Wall Street.

In *Winning on Wall Street*, Marty Zweig said, "The major direction of the market is dominated by monetary considerations, primarily Federal Reserve policy and the movement of interest rates." Like Zweig and Ned Davis Research, Dan Sullivan of *The Chartist*, who along with Zweig has consistently outperformed in the Hulbert Advisory Service rankings since 1980, puts most of his emphasis on market trends, market momentum, and monetary conditions. Sullivan says, "The Monetary Model gauges the direction of interest rates. There is a direct correlation between the movement of interest rates and stock prices. Favorable monetary conditions (declining rates) provide the catalyst for bull markets. Conversely, rising rates hinder the upward movement of stock prices as fixed-rate investments become more attractive to investors."

One classic indicator of Fed easing or tightening is the yield curve, featured in Figure 1.5. By forcing the T-bill yields (which the Fed largely controls) above T-bond yields, the Fed can push up long-term interest rates that compete with stock dividend yields. And in the 58.5 percent of the time in which the central bank has pushed short-term rates well below long-term rates, the S&P 500 has shot ahead at double-digit rates, as you can see on the chart.

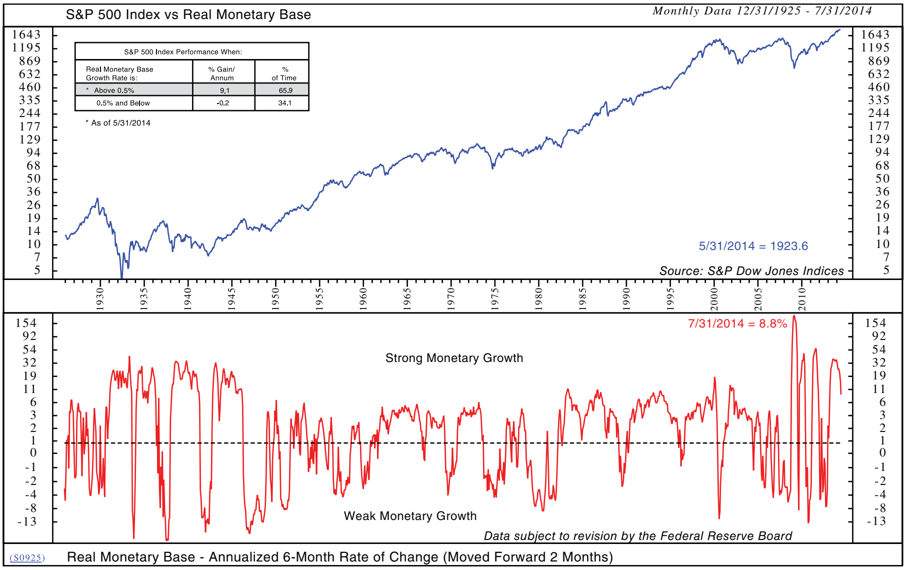
One example of the availability of money can be seen on Figure 1.6. All of the net gains in stocks since 1925 have come when the Fed was



S&P 500 Gain/Annum When:

Yield Curve Is:	Gain/ Annum	% of Time
* Above 1.1	11.5	58.5
Between 0 and 1.1	6.9	29.1
0 and Below	-7.2	12.4

FIGURE 1.5 *TOP*, S&P 500 INDEX; *BOTTOM*, YIELD CURVE (LONG-TERM TREASURY BOND YIELD MINUS THREE-MONTH T-BILL YIELD SPREAD)



S&P 500 Index Performance When:		
Real Monetary Base Growth Rate is:	% Gain/ Annum	% of Time
* Above 0.5%	9.1	65.9
0.5% and Below	-0.2	34.1

* As of 5/31/2014

Source: S&P Dow Jones Indices

Data subject to revision by the Federal Reserve Board

FIGURE 1.6 ***TOP,*** **S&P 500 INDEX;** ***BOTTOM,*** **REAL MONETARY BASE: ANNUALIZED SIX-MONTH RATE OF CHANGE (MOVED FORWARD TWO MONTHS)**

providing monetary-base growth above 0.5 of a percentage point on a real basis (above inflation). The Fed has a definite impact on supply and demand for stocks.

As we learned in kindergarten, try to be friends with the biggest kid in class—in this case, the Fed.

Rule No. 3. Be wary of the crowd at extremes. I believe that the stock market is a fairly efficient mechanism. If you are good at controlling your losses, the market presents you with the likelihood of about a 9 to 10 percent gain per year over the long run. To beat that return—to beat the efficient market—you are going up against not only some of the smartest people around, but also some of the most sophisticated technology.

Much of the time, the crowd is right. Yet almost by definition, the only way to beat the majority is by selectively taking a position against them. So we use numerous ways to measure majority crowd sentiment, to gauge market risk. For example, we monitor valuation and sentiment indicators, such as new-issue speculation, advisory-service sentiment, put/call ratios, the Dow earnings yield, and mutual fund cash/assets ratios to measure emotional moves in and out of the market. What distinguishes our philosophy from others is that our indicators are generally built to go *with* the majority flow until the indicators reach extreme readings and begin to *reverse*. It is at that point that it usually pays to be contrary.

In *Beating the Street* Peter Lynch said, "Over the past three decades, the stock market has come to be dominated by a herd of professional investors. Contrary to popular belief, this makes it easier for the amateur investor. You can beat the market by ignoring the herd."

Even Max Lucado, best-selling author, writer, and preacher, points out, "A man who wants to lead the orchestra must turn his back on the crowd."

In *Winning on Wall Street* Marty Zweig said, "Just because 51 percent of the crowd is bullish and 49 percent bearish is no reason the market cannot go higher. In fact, it probably will advance at that point. The time to be wary of crowd psychology is when the crowd gets extraordinarily one-sided. . . . The idea is: Beware of the crowd when the crowd is too one-sided."

Warren Buffett said one of his secrets to success is "we simply attempt to be fearful when others are greedy and to be greedy only when others are fearful." And this value investor explains the connection between sentiment and values:

> The most common cause of low prices is pessimism—sometimes pervasive, sometimes specific to a company or industry. We want to do business in such an environment, not because we like pessimism, but because we like the prices it produces.[22]

Technical analyst Joe Granville said, "If it is obvious, it is obviously wrong." I think what he meant is that what everybody knows is already priced into stocks (discounted), and it is, thus, not worth knowing.

The last word on sentiment goes to another very successful investor, Sir John Templeton, who ostensibly invested based upon fundamentals and values. He said, "Bull markets are born on pessimism, grow on skepticism, mature on optimism, and die on euphoria."

As I learned in kindergarten, if you want good reports or the teacher's praise, you need to be able to stand out from the crowd. It is not always good to follow the other kids, especially when they're really emotional.

What Is Contrary Opinion and How to Use It

If you want to try to be a genius and catch major market turning points, you can start with contrary opinion—wait for majority opinion to reach an extreme and then assume the opposite position. At turning points, contrary sentiment indicators are nearly always right. Almost by definition, *a top in the market is the point of maximum optimism and a bottom in the market is the point of maximum pessimism.*

To better understand how contrary opinion operates, think of money as financial liquidity. And think of an extreme in liquidity as the direct opposite of an extreme in psychology. If everyone decided that the Dow Industrials would rise by 25 percent, for instance, they would rush out and buy stocks. Everyone would become fully invested, the market would be overbought, and nobody would be left to buy, in which case the market wouldn't be able to go any higher. *When optimism is extreme, liquidity is low.*

On the other hand, if everyone was pessimistic and thought the Dow would drop by 25 percent, the weak and nervous stockholders would sell, the market would be sold out, and nobody would be left to sell, in which case the market wouldn't go down any more. Whereas increasing optimism and confidence produce falling liquidity, rising pessimism and fear result in rising liquidity.

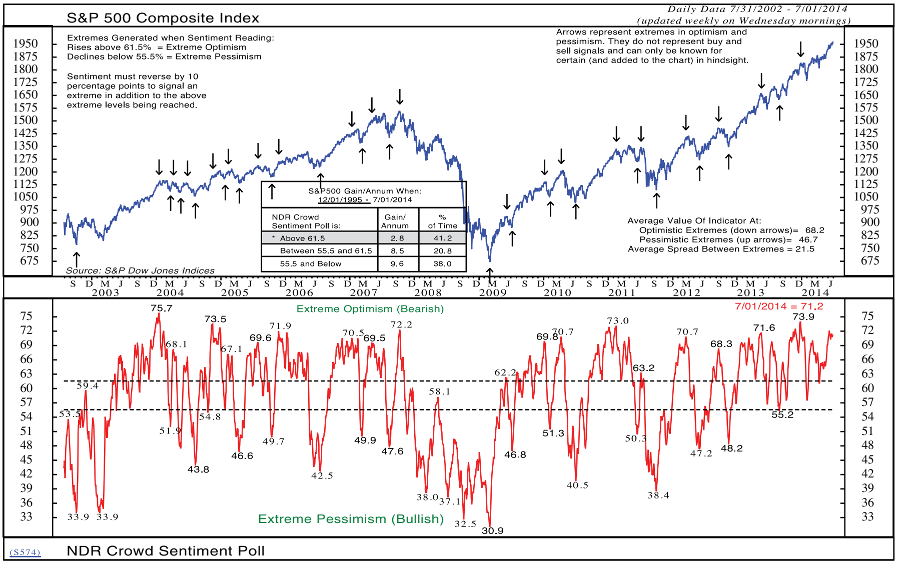
My favorite way to describe this inverse relationship is to compare liquidity to a car's shock absorbers. As you drive down the road, you will inevitably encounter some potholes—some random, unpredictable, negative events. If your car has good shocks (abundant liquidity), you will be able to continue merrily along your journey after encountering a pothole. But if your car has poor shocks (no liquidity), you may crash.

Another way of looking at contrary opinion is to compare stockholders to nuts in a tree. An investor once wrote to me, asking, "How do you get nuts out of a nut tree?" The answer, he said, is through a nut-shaking machine, which is hooked to the nut tree. The machine rattles the tree, and the nuts drop until all of the nuts have fallen out. In other words, when there is enough fear in the market, all of the weak holders are shaken out, and there is no selling left to be done. "Have the nuts been shaken out," the contrarian asks "or are all of the speculative traders fully invested?"

The impact of contrary opinion can also be illustrated by comparing the market to a theater. If someone yelled "*fire*" in a theater full of people, panic would break out and people would get crushed in the ensuing rush to the door. But if someone yelled "*fire*" in a theater with very few people, the people would be more likely to walk out in an orderly manner. In looking at any market, it is important to determine the degree to which it is crowded.

What makes contrary opinion really valuable is that it opens your mind and keeps you from being swept up in the crowd. With an open mind, you can say to yourself, "I know the majority is right, and I know the world is going to hell in a handbasket, but what if the minority is right? What if there is a silver lining in the cloud out there?" *Contrary opinion allows you to be flexible, enabling you to turn your emotions inside out, and to act when you need to act.*

Psychology plays into the supply-demand equation through valuation and emotional buying and selling when greed or fear takes over. To show clients why they should be wary of the crowd at extremes, many years ago I put together a composite of seven sentiment indicators and called it the NDR Crowd Sentiment Poll. The record can be seen in Figures 1.7 and 1.8, and in Table 1.1.



S&P500 Gain/Annum When:
12/01/1995 - 7/01/2014

NDR Crowd Sentiment Poll is:	Gain/ Annum	% of Time
* Above 61.5	2.8	41.2
Between 55.5 and 61.5	8.5	20.8
55.5 and Below	9.6	38.0

Please see important disclaimer at the beginning of the book.

FIGURE 1.7 ***TOP*, S&P 500 COMPOSITE INDEX; *BOTTOM*, CROWD SENTIMENT POLL (2002–2014)**

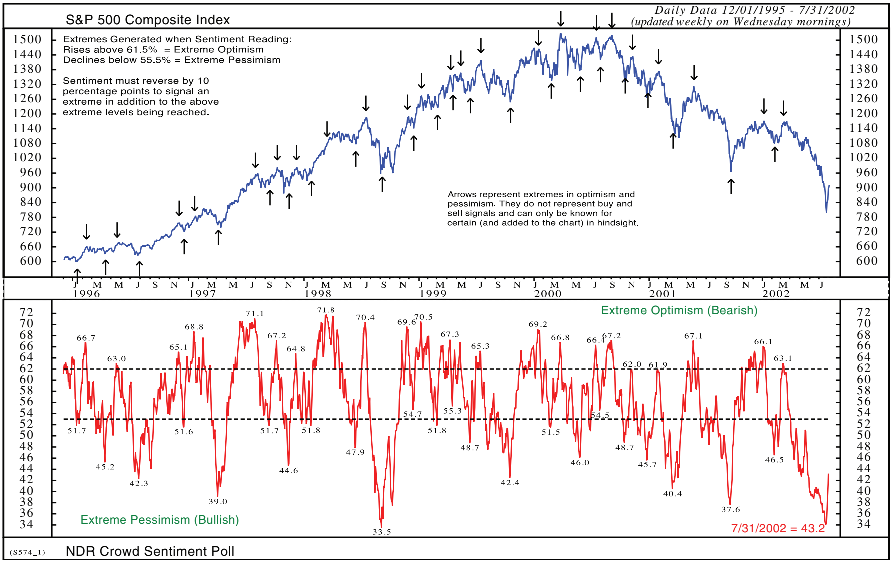


FIGURE 1.8 ***TOP,*** **S&P 500 COMPOSITE INDEX;** ***BOTTOM,*** **CROWD SENTIMENT POLL (1995–2002)**

When I built the NDR Crowd Sentiment Poll, my main goal was to prove to clients that the crowd was *usually* wrong at extremes in sentiment. We tried to judge the extremes objectively by defining certain levels as excessive and looking for big shifts. But as proven by the historical record (1996–2013), shown in Table 1.1, the crowd has yet to be right even *once* at extremes in sentiment. In fact, following the crowd at extremes would have cost one over 10,000 S&P 500 points since 1996.

To be fair, the extremes can *only* be known for certain in hindsight, and the optimistic extreme of 71.6 percent bulls on May 22, 2013, was almost correct. More importantly, the extreme pessimism in 2008 and early 2009 was largely correct, even if the *exact* extreme was wrong. Sentiment indicators are not perfect in runaway momentum moves, but they can help one keep a clear head when the crowd is fearful or euphoric.

TABLE 1.1 CROWD SENTIMENT POLL

NDR CROWD SENTIMENT POLL (S574)

Date	Extreme Pessimism	Extreme Optimism	S&P 500	S&P Point Profit/Loss	Crowd Right	Crowd Wrong
1/15/1996	51.7		600	-61		x
2/12/1996		66.7	661	-24		x
4/12/1996	45.2		637	-32		x
5/17/1996		63.0	669	-38		x
7/29/1996	42.3		631	-126		x
11/29/1996		65.1	757	-36		x
12/16/1996	51.6		721	-56		x
1/20/1997		68.8	777	-19		x
4/4/1997	39.0		758	-194		x
7/30/1997		71.1	952	-32		x
9/15/1997	51.7		920	-63		x
10/7/1997		67.2	983	-77		x
11/12/1997	44.6		906	-78		x
12/5/1997		64.8	984	-27		x
1/26/1998	51.8		957	-122		x
3/16/1998		71.8	1079	-2		x
6/15/1998	47.9		1077	-107		x
7/16/1998		70.4	1184	-210		x
9/4/1998	33.5		974	-214		x
11/23/1998		69.6	1188	-47		x
12/14/1998	54.7		1141	-134		x
1/8/1999		70.5	1275	-49		x
3/2/1999	51.8		1226	-124		x
4/13/1999		67.3	1350	-44		x
4/20/1999	55.3		1306	-62		x
5/13/1999		66.8	1368	-74		x
6/14/1999	48.7		1294	-125		x
7/16/1999		65.3	1419	-165		x
10/18/1999	42.4		1254	-196		x
1/13/2000		69.2	1450	-97		x
2/24/2000	51.5		1353	-174		x
3/24/2000		66.8	1527	-145		x
5/25/2000	46.0		1382	-128		x
7/17/2000		66.4	1510	-90		x
7/28/2000	54.5		1420	-101		x
9/1/2000		67.2	1521	-147		x
10/13/2000	48.7		1374	-58		x
11/6/2000		62.0	1432	-117		x
12/26/2000	45.7		1315	-59		x
1/30/2001		61.9	1374	-223		x
3/16/2001	40.4		1151	-158		x
5/22/2001		67.1	1309	-343		x
9/21/2001	37.6		966	-207		x
1/4/2002		66.1	1173	-77		x
2/8/2002	46.5		1096	-68		x
3/8/2002		63.1	1164	-387		x
10/9/2002	33.9		777	-371		x
1/21/2004		75.7	1148	-39		x
3/25/2004	51.9		1109	-36		x
4/12/2004		68.1	1145	-51		x
5/21/2004	47.3		1094	-47		x
6/30/2004		66.6	1141	-76		x
8/13/2004	43.8		1065	-119		x
11/18/2004		73.5	1184	-13		x
1/28/2005	55.4		1171	-39		x
2/15/2005		67.1	1210	-57		x
4/19/2005	46.6		1153	-91		x
8/2/2005		69.6	1244	-66		x
10/18/2005	49.7		1178	-90		x
11/25/2005		71.9	1268	-28		x
7/21/2006	42.5		1240	-191		x
1/17/2007		70.5	1431	-44		x
3/16/2007	49.9		1387	-126		x
5/9/2007		69.5	1513	-102		x
8/16/2007	47.6		1411	-151		x
10/12/2007		72.2	1562	-879		x
3/6/2009	30.9		683	-262		x
6/11/2009		62.2	945	-44		x
7/13/2009	46.8		901	-246		x
1/11/2010		69.8	1147	-71		x
2/12/2010	51.3		1076	-136		x
4/15/2010		70.7	1212	-152		x
7/7/2010	40.5		1060	-283		x
2/18/2011		73.0	1343	-71		x
6/17/2011	50.3		1272	-72		x
7/8/2011		63.2	1344	-220		x
10/4/2011	38.4		1124	-286		x
3/19/2012		70.7	1410	-124		x
6/5/2012	47.2		1286	-175		x
9/19/2012		68.3	1461	-108		x
11/15/2012	49.5		1353	-302		x
5/22/2013		71.6	1655	-15		x
9/3/2013	55.2		1640	-201		x
12/30/2013		73.9	1841		?	
Average	46.7	68.2	Total	-10501		

Ned Davis Research Group *S574_IND.RPT*

HISTORY AND RISK MANAGEMENT

Two other rules we use in building timing models are these:

1. When I asked in kindergarten why we needed to study boring old history, the teacher said, "Those who do not study history are

condemned to repeat its mistakes." Ned Davis Research takes great pride in our large historical database. We are able to take our models back as far in history as possible, so they have a chance to adjust to as many different environments as possible.

We also conduct many historical studies for investor perspective. Two real-time examples follow.

Table 1.2 is a little subjective for my taste, but it is also one of the studies of which I am proudest. I put it out on the morning of 9/11, right after the horrible attacks on the World Trade Center. It shows how the study of history can provide perspective and help one stay grounded.

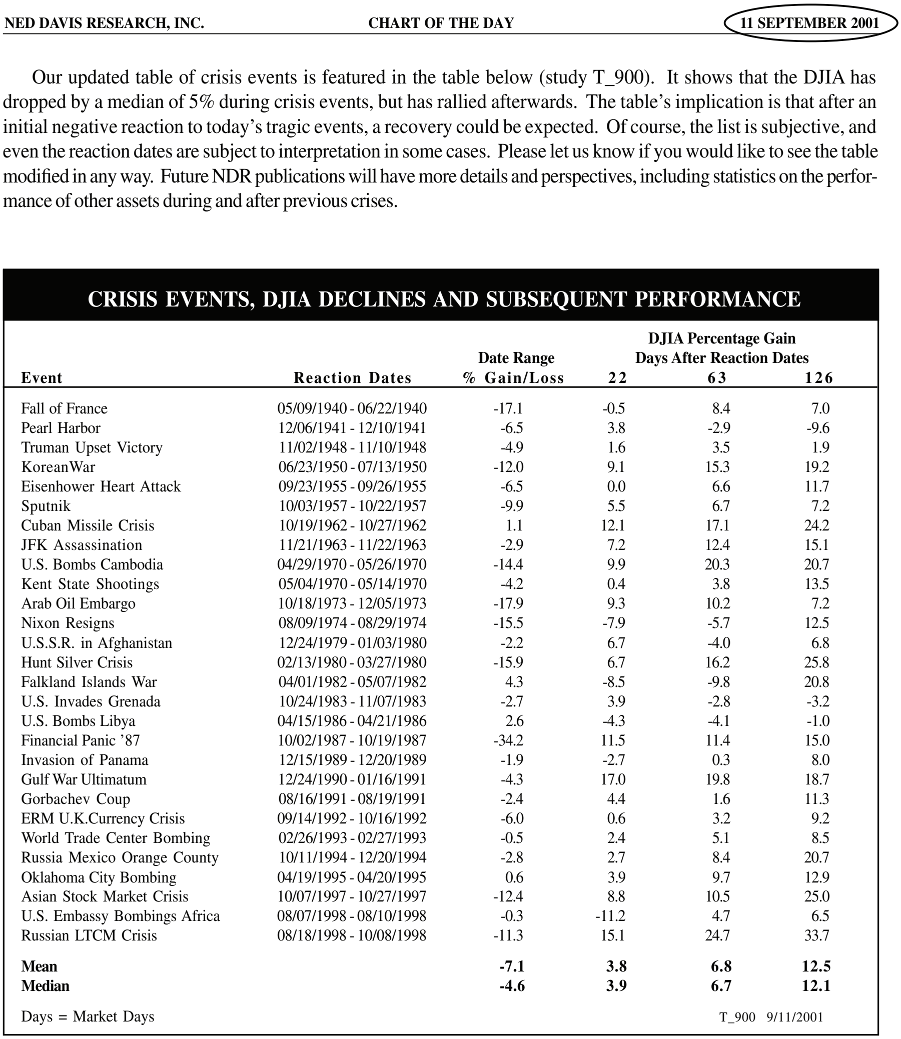
Using history for perspective and keeping one's mind open and flexible is critical for investment success. Nearly all surveys of Wall Street investors show that they lean Republican, so it is widely believed that the stock markets prefer Republicans. And, in fact, the market and economy performed very well under Eisenhower and Reagan.

When President Obama was elected in late 2008, many wealthy investors got out of stocks, predicting disaster. They were particularly upset with Obama's calls to sharply raise taxes on the top 2 percent, a group that happens to be large holders of stock. The market did continue to decline sharply in early 2009. However, I wrote a *Hotline* arguing that in order to make money in stocks consistently, I believed that one should analyze them with an apolitical mindset. In fact, I featured Table 1.3, and wrote that, "The historical record shows the stock market doing better under Democratic presidents, but also with more inflation."

No matter how things eventually turn out or what one thinks about President Obama, certainly a study of history provides a useful perspective. I believe the record since 1901 suggests stressing factual reality over Wall Street myths. Also, while people fret about a gridlocked government, the limited historical examples suggest that this, too, has not been a big problem for stocks.

President Harry S. Truman once said, "My choice early in life was either to be a piano player in a whorehouse or a politician. And to tell the truth, there's hardly any difference." Regardless of what people think about politicians, I still try to respect people's political

TABLE 1.2 CRISIS EVENTS, DJIA DECLINES, AND SUBSEQUENT PERFORMANCE



NED DAVIS RESEARCH, INC. CHART OF THE DAY 11 SEPTEMBER 2001

Our updated table of crisis events is featured in the table below (study T_900). It shows that the DJIA has dropped by a median of 5% during crisis events, but has rallied afterwards. The table's implication is that after an initial negative reaction to today's tragic events, a recovery could be expected. Of course, the list is subjective, and even the reaction dates are subject to interpretation in some cases. Please let us know if you would like to see the table modified in any way. Future NDR publications will have more details and perspectives, including statistics on the performance of other assets during and after previous crises.

CRISIS EVENTS, DJIA DECLINES AND SUBSEQUENT PERFORMANCE

Event	Reaction Dates	Date Range % Gain/Loss	DJIA Percentage Gain Days After Reaction Dates 22	63	126
Fall of France	05/09/1940 - 06/22/1940	-17.1	-0.5	8.4	7.0
Pearl Harbor	12/06/1941 - 12/10/1941	-6.5	3.8	-2.9	-9.6
Truman Upset Victory	11/02/1948 - 11/10/1948	-4.9	1.6	3.5	1.9
Korean War	06/23/1950 - 07/13/1950	-12.0	9.1	15.3	19.2
Eisenhower Heart Attack	09/23/1955 - 09/26/1955	-6.5	0.0	6.6	11.7
Sputnik	10/03/1957 - 10/22/1957	-9.9	5.5	6.7	7.2
Cuban Missile Crisis	10/19/1962 - 10/27/1962	1.1	12.1	17.1	24.2
JFK Assassination	11/21/1963 - 11/22/1963	-2.9	7.2	12.4	15.1
U.S. Bombs Cambodia	04/29/1970 - 05/26/1970	-14.4	9.9	20.3	20.7
Kent State Shootings	05/04/1970 - 05/14/1970	-4.2	0.4	3.8	13.5
Arab Oil Embargo	10/18/1973 - 12/05/1973	-17.9	9.3	10.2	7.2
Nixon Resigns	08/09/1974 - 08/29/1974	-15.5	-7.9	-5.7	12.5
U.S.S.R. in Afghanistan	12/24/1979 - 01/03/1980	-2.2	6.7	-4.0	6.8
Hunt Silver Crisis	02/13/1980 - 03/27/1980	-15.9	6.7	16.2	25.8
Falkland Islands War	04/01/1982 - 05/07/1982	4.3	-8.5	-9.8	20.8
U.S. Invades Grenada	10/24/1983 - 11/07/1983	-2.7	3.9	-2.8	-3.2
U.S. Bombs Libya	04/15/1986 - 04/21/1986	2.6	-4.3	-4.1	-1.0
Financial Panic '87	10/02/1987 - 10/19/1987	-34.2	11.5	11.4	15.0
Invasion of Panama	12/15/1989 - 12/20/1989	-1.9	-2.7	0.3	8.0
Gulf War Ultimatum	12/24/1990 - 01/16/1991	-4.3	17.0	19.8	18.7
Gorbachev Coup	08/16/1991 - 08/19/1991	-2.4	4.4	1.6	11.3
ERM U.K.Currency Crisis	09/14/1992 - 10/16/1992	-6.0	0.6	3.2	9.2
World Trade Center Bombing	02/26/1993 - 02/27/1993	-0.5	2.4	5.1	8.5
Russia Mexico Orange County	10/11/1994 - 12/20/1994	-2.8	2.7	8.4	20.7
Oklahoma City Bombing	04/19/1995 - 04/20/1995	0.6	3.9	9.7	12.9
Asian Stock Market Crisis	10/07/1997 - 10/27/1997	-12.4	8.8	10.5	25.0
U.S. Embassy Bombings Africa	08/07/1998 - 08/10/1998	-0.3	-11.2	4.7	6.5
Russian LTCM Crisis	08/18/1998 - 10/08/1998	-11.3	15.1	24.7	33.7
Mean		**-7.1**	**3.8**	**6.8**	**12.5**
Median		**-4.6**	**3.9**	**6.7**	**12.1**

Days = Market Days T_900 9/11/2001

Source: NDR.

beliefs. But the study of history tells me that investing based upon politics is a poor way to make money.

2. Despite all our efforts to build models that will provide good gains going forward, we realize that we will never find the Holy Grail, and thus, we try to build *good money management* into our timing

TABLE 1.3 PERCENTAGE GAIN PER ANNUM FOR STOCKS, INDUSTRIAL PRODUCTION, INFLATION, BONDS, AND THE U.S. DOLLAR BY PARTY OF PRESIDENT AND MAJORITY PARTY IN CONGRESS, 1901–2014

GAIN/ANNUM (%) FOR STOCKS, INDUSTRIAL PRODUCTION, INFLATION, BONDS, AND U.S. DOLLAR ($) BY PARTY OF PRESIDENT AND MAJORITY PARTY* IN CONGRESS (03/04/1901 - 07/01/2014)

				Since:	1925	1971
	Stocks (DJIA)	**Industrial Production**	**Inflation (CPI)**	**Real Stock Returns**	**Long-Term Gov't Bonds**	**Fed's U.S. Dollar**
Democratic President	7.97	5.18	4.35	3.47	3.53	-0.25
Republican President	3.02	1.80	1.80	1.20	7.74	-1.39
Democratic Congress	6.21	4.45	4.29	1.85	5.28	-1.21
Republican Congress	3.62	1.45	0.65	2.95	6.39	-0.23
Dem. Pres., Dem. Congress	7.53	6.14	4.48	2.92	2.57	-2.38
Dem. Pres., Rep. Congress	9.76	1.11	3.78	5.76	8.12	3.93
Rep. Pres., Rep. Congress	1.70	1.56	-0.37	2.07	5.48	-4.24
Rep. Pres., Dem. Congress	4.46	2.05	4.01	0.43	8.99	-0.52
All Periods Buy/Hold	5.28	3.38	2.99	2.22	5.57	-0.94

**Majority Party = Party with average of % control in House and % control in Senate greater than 50%.*

Ned Davis Research, Inc. *T_50.RPT*

> models by attempting to cut losses short and letting profits run. There are periods, historically, in which model indicators tend to fail or stay wrong against a major move. Accordingly, we put stop-losses in the indicators, where the indicator weight goes to zero until the indicator gives a new signal. As we learned in kindergarten, sometimes doo-doo happens, so we need to be prepared.

Finally, we see ourselves as risk managers. Here's a story about risk management I want to share with you.

Two cowboys, having lost their jobs, went into a bar to drown their sorrows. Over the bar was a sign that said, Bear Hides $25. When they asked the bartender what that meant he said, "It means what it says," so the two cowboys went out, came back with two bear hides, and received $50. One of the cowboys was a capitalist and he said, "All we need now is inventory," so they got on their horses and rode deep into bear country. It was dark out, so they put up their tent and went to sleep. Early the next morning they heard a rumble, so one cowboy looked outside to see what it was. When he opened the tent he saw 10,000 growling bears. He looked at all the bears and then looked at the other cowboy, and with a grin said, "We're rich!"

One good definition of the difference between professionals and amateurs is that amateurs ask what the potential rewards are, while professionals ask what the risks are. Take our composite timing models, for example. If we have a model composed of 10 indicators, all of which are bullish, we would obviously be extremely bullish. But let's say two of these 10 reliable indicators turn bearish. Obviously, with eight bullish indicators and just two bearish indicators, we would stay with the investment, but we might take 20 percent of our chips off the table out of respect for the higher risks. This is not a black-and-white world that we live in. It's beautifully composed of shades of gray and degrees of bullishness and bearishness.

Thus, the bottom line at Ned Davis Research is that our timing models, at every stage of development, are designed with one thought foremost in mind, and that is *controlling big mistakes*.

The Rest of the Book

Chapter 2 explains our process for building models. Chapter 3 features one of our key cyclical models for stocks from my research assistant, Loren Flath. Loren did much of the model building, and he addresses the many questions we get about various indicators and models. In Chapter 4 Loren updates a bond-timing model he originally built for Marty Zweig's 1987 book, *Winning with New IRAs*. In Chapter 5 I present a case for a potential bear market in 2014. Chapter 6 is from Ned Davis Research's senior international economist, Alejandra Grindal, regarding demographics, and finally, Chapter 7 is about the U.S. energy renaissance from NDR's commodity strategist, John LaForge. I am confident that if you are objective, disciplined, flexible, and manage risk, the methods presented in this book can turn you into a moneymaking machine.

Good Luck!

Ned Davis

The Nine Rules of Ned Davis Research Group

The nine rules that follow are a teaching aid for new NDR employees.

1. **Don't Fight the Tape**
   The tape provides a stop-loss for should-be beliefs.
   The trend is your friend (smoothings, slopes, and stop-losses).
   Go with Mo (momentum, breadth thrusts, signs of churning).
   Listen to the cold, bloodless verdict of the market (pay special notice to indicators on the leading edge of the market like volume,

new highs or lows, the Dow Utilities, bonds, relative strength, etc.).

Moves with a lot of confirmation are the healthiest, and huge moves are often global in nature.

2. Don't Fight the Fed

Remain in harmony with interest-rate trends (rates dropping is good; rates rising is bad).

Money moves markets. Stay in line with monetary trends (especially money less economic demands equals liquidity left over for financial markets).

Economic strains: inflationary pressures lead to Fed tightness (up commodities, up gold, down dollar, rising real interest rates).

Economic ease: disinflation leads to Fed ease.

3. Beware of the Crowd at Extremes

Go with the flow until it reaches a psychological extreme and begins to reverse. At that point, it pays to take a contrary approach (reverse inverted brackets).

Key relationship: liquidity and psychology are inversely related.

Extreme optimism equals low cash. Extreme fear equals high cash.

Liquidity is like shock absorbers on a car.

Is the theater crowded or empty?

Top is the point of maximum optimism. Bottom is the point of maximum pessimism.

Valuation measures long-term extremes in psychology.

4. Rely on Objective Indicators

Rather than using gut emotions to determine the supply and demand balance, use the weight-of-the-evidence approach (computer-derived mathematical measurements).

5. Be Disciplined

Our mandate is to follow our models, forcing us to be *disciplined*.

Benchmark or anchor composite model determines core invested position.

6. Practice Risk Management

We are in the business of making mistakes. Winners make small mistakes, losers make big mistakes. We focus on a risk management strategy to keep mistakes small (use stop-losses and a heavy dose of technical trend-sensitive indicators).

(*continued*)

7. **Remain Flexible**

   Indicators change and data is revised. Scenarios change. Use dynamic modeling, such as standard deviation brackets. Review models on an objective and timely basis.

8. **Money Management Rules**

   We are more interested in making money than being right.

   Be humble and flexible (be ready to turn emotions upside down and thus be open-minded).

   Let profits run, cut losses short.

   Think in terms of risks, including the risk of missing a bull market.

   Buy on the rumor, sell on the news.

   Consider cyclical, seasonal, progressive trading patterns that do not add to models (for fun).

9. **Those Who Do Not Study History Are Condemned to Repeat Its Mistakes**

   Go back as far as possible. Use bull, bear, and neutral cycles.

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CHAPTER 2

The Model-Building Process

SAM BURNS

UPDATED BY NED DAVIS

The first chapter described the types of indicators we use to try to manage risk in the stock market in general. This chapter will further outline our model-building process. Then Chapters 3 and 4 will give the details of actual stock and bond models.

THE MODEL-BUILDING PROCESS

A market-timing model can form the basis of an investor's market outlook by providing a benchmark for adjusting exposure to different types of assets. By using objective, quantitative information and testing its predictive value against historical data, an investor can avoid making decisions based on emotion, gut feel, or the pronouncements of the market guru *du jour.* A model with a variety of indicators, which individually have value in highlighting risk and reward, can offer a more stable, predictable, and reliable reflection of the market than any single indicator can. Such a model can anchor the investment/asset-allocation process.

WHERE TO START: MODEL INPUTS

Any model is only as good as its inputs, and if those inputs contain errors, aren't timely, or are simply irrelevant, the model will provide little benefit. So the first thing investors who want to build or maintain a quantitative timing model must do is make sure that they have clean (error-free), reliable data that is updated regularly. One must also take into account data revisions, which are common in economic reports, and make sure that the information used is consistent over time. At Ned Davis Research, we devote a lot of time and effort to making sure our data is as clean, as reliable, and as up-to-date as possible.

The next thing an investor building a timing model should investigate is which data series, out of the innumerable possible sets out there, are the most useful or relevant for asset-allocation and market-timing purposes. Some data is best suited for aggressive, short-term trading, while other data is best suited for long-term asset allocation and risk control. Finding out what is useful is the biggest challenge the investor faces and is a primary goal of our analysts. To help narrow the possibilities and provide some structure for those looking to use or develop models, we offer some of the results of our research and the ways we categorize data.

One distinction we often make is between "internal" and "external" indicators.

Internal indicators are based on the market itself. They include price trend and momentum, as well as corollary indicators, such as the number of stocks rising versus the number falling on a given day (a.k.a. *breadth*). Internal indicators are generally designed to ensure that we keep our eye on the ball by focusing the model on the actual market whose future we are trying to predict, and that we do not allow the model to become too far removed from that market's primary underlying trend. Our goal is to be in harmony with that trend. Because we have found that the trend in market prices is perhaps the most important factor to consider, internal measures typically account for half (or more) of the indicators in our timing models.

External indicators aren't derived from the market directly, but are known (or thought) to significantly influence it. The best example of an important external indicator is interest rates. History shows that their level and direction have a major impact on the direction of stock prices. So we try to include indicators based on interest rates in our stock-timing models.

The following sections describe the various categories of indicators we have found useful in constructing models.

SENTIMENT AND VALUATION INDICATORS

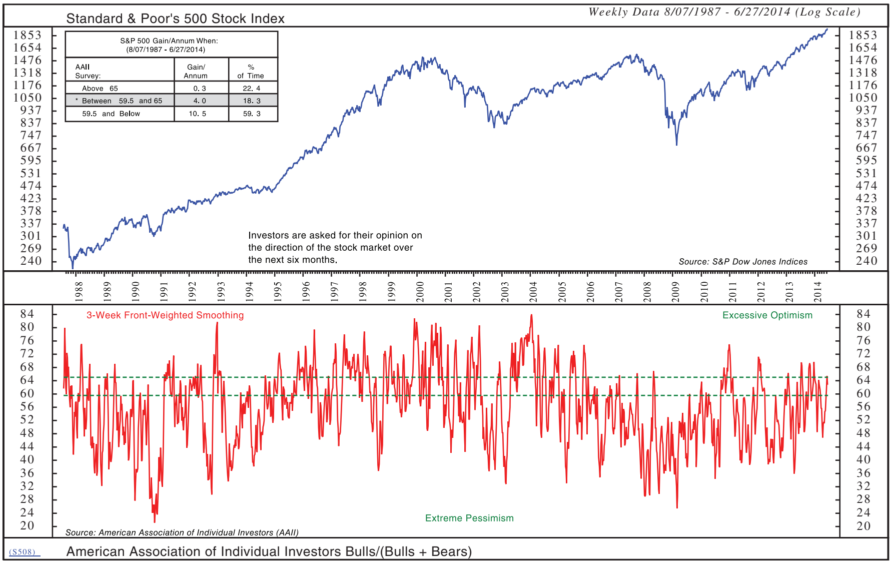
While many analysts consider sentiment and valuation indicators to be quite separate and distinct, we put the two together because we often view valuation indicators as simply another way of measuring investor sentiment.

As noted in other chapters, investor psychology plays a crucial role in how stock prices behave, and so monitoring what most investors are thinking and doing is very important. There are several regularly updated polls or surveys of various investors, including market newsletter writers, futures traders, and individuals. These polls typically just ask the respondents whether they have a bullish (positive) or a bearish (negative) view on stocks and then aggregate the responses to give the percentage of the group that is bullish or bearish at any given time. When a great majority of investors have the same view of the market, it is typically a warning to expect a reversal contrary to the majority opinion. In addition to watching the surveys, we also consider data related to valuation, such as price/earnings (P/E) ratios, as a sentiment indicator. Why? Because the price investors are willing to pay for a stock, relative to its underlying assets or earnings, indicates their level of confidence or optimism about the prospects for that stock (or in the aggregate, the market). When investors are very optimistic they will pay higher prices, as reflected in high price/earnings or price/book value ratios, while pessimistic investors will buy only at low valuation levels. We see how much investors are paying for current valuations and compare that to historical norms. This has the added benefit of reflecting what investors are actually *doing*, as opposed to what they are *saying* in response to polls.

An example of a sentiment and valuation indicator is the results of the weekly poll of its members by the American Association of Individual Investors, and the price/earnings ratio of the S&P 500 (see Figures 2.1 and 2.2).

MONETARY INDICATORS

Some of the most important external indicators are monetary indicators. These reflect what is happening to the *price* of money (interest rates) and the *supply* (availability) of money. Interest rates are a primary driver of stock returns, because high rates make debt securities relatively more attractive than equities to investors, and also drive up businesses' cost of raising capital. So indicators based on the level and trend of interest rates (or bond prices, which are inversely related to rates) are common in our stock-market models. Of course, bond prices and interest rates appear in our bond-market models as well, but they are considered internal indicators in that context. We also use indicators based on the growth of the money supply,



S&P 500 Gain/Annum When:
(8/07/1987 - 6/27/2014)

AAII Survey:	Gain/ Annum	% of Time
Above 65	0. 3	22. 4
* Between 59.5 and 65	4. 0	18. 3
59.5 and Below	10. 5	59. 3

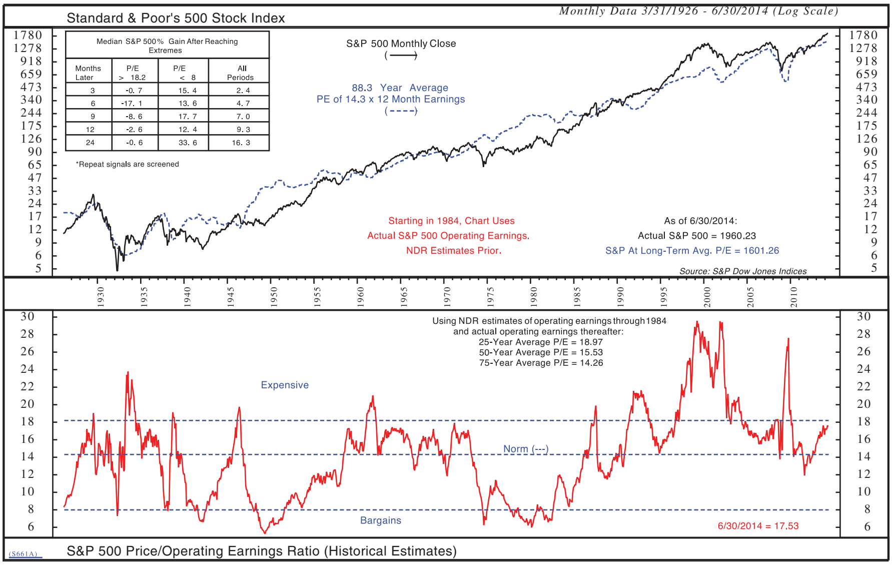
Investors are asked for their opinion on the direction of the stock market over the next six months.

Source: S&P Dow Jones Indices

Source: American Association of Individual Investors (AAII)

FIGURE 2.1

***TOP*, S&P 500 INDEX; *BOTTOM*, AMERICAN ASSOCIATION OF INDIVIDUAL INVESTORS: BULLS/ (BULLS + BEARS)**



Median S&P 500% Gain After Reaching Extremes

Months Later	P/E > 18.2	P/E < 8	All Periods
3	-0. 7	15. 4	2. 4
6	-17. 1	13. 6	4. 7
9	-8. 6	17. 7	7. 0
12	-2. 6	12. 4	9. 3
24	-0. 6	33. 6	16. 3

*Repeat signals are screened

Starting in 1984, Chart Uses Actual S&P 500 Operating Earnings, NDR Estimates Prior.

As of 6/30/2014:
Actual S&P 500 = 1960.23
S&P At Long-Term Avg. P/E = 1601.26

Source: S&P Dow Jones Indices

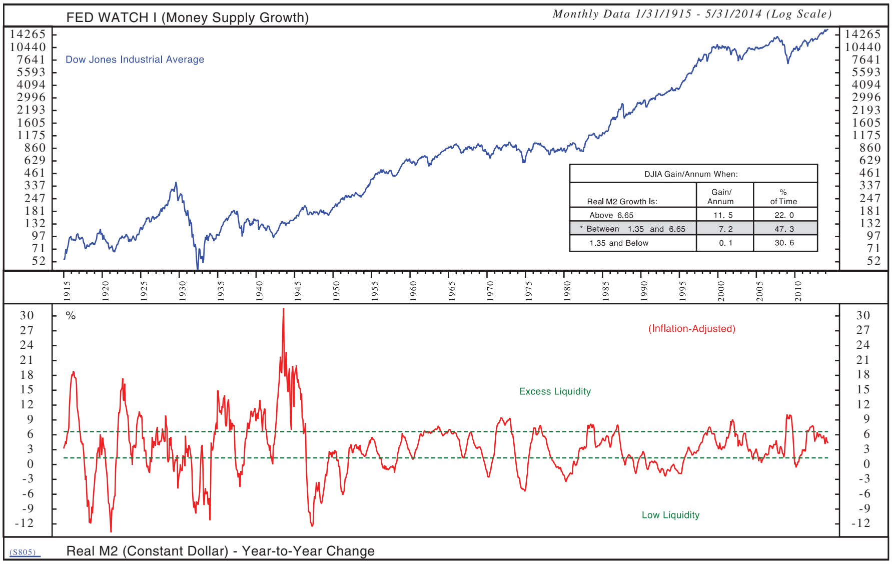
Using NDR estimates of operating earnings through 1984 and actual operating earnings thereafter:
25-Year Average P/E = 18.97
50-Year Average P/E = 15.53
75-Year Average P/E = 14.26

FIGURE 2.2

***TOP*, S&P 500 INDEX; *BOTTOM*, S&P 500 PRICE/ OPERATING EARNINGS RATIO (HISTORICAL ESTIMATES)**

since changes in that often influence interest rates, the stock market, and the economy as a whole. We do this by tracking M1, M2, and M3, which are monetary aggregates defined and watched carefully by the Federal Reserve. Figure 2.3 shows how such indicators can be used.

One of the principles that we adhere to at Ned Davis Research (as noted in Chapter 1) is *don't fight the Fed*. The Fed, of course, is the Federal Reserve Board, which acts as the nation's central bank and largely controls the money supply and short-term interest rates. It has a great deal of influence over the banking system, the economy, and the financial markets, and its primary goal is to achieve price stability (a very low inflation rate) and sustainable economic growth. Because it is concerned, first and foremost, with keeping inflation low and economic growth reasonable (not too strong and not too weak), the Fed uses its influence on interest rates and the money supply to stimulate the economy when it is too weak and restrain the economy when it appears to be growing at an unsustainable rate. Excessively high growth often leads to higher inflation, as demand for goods and services exceeds



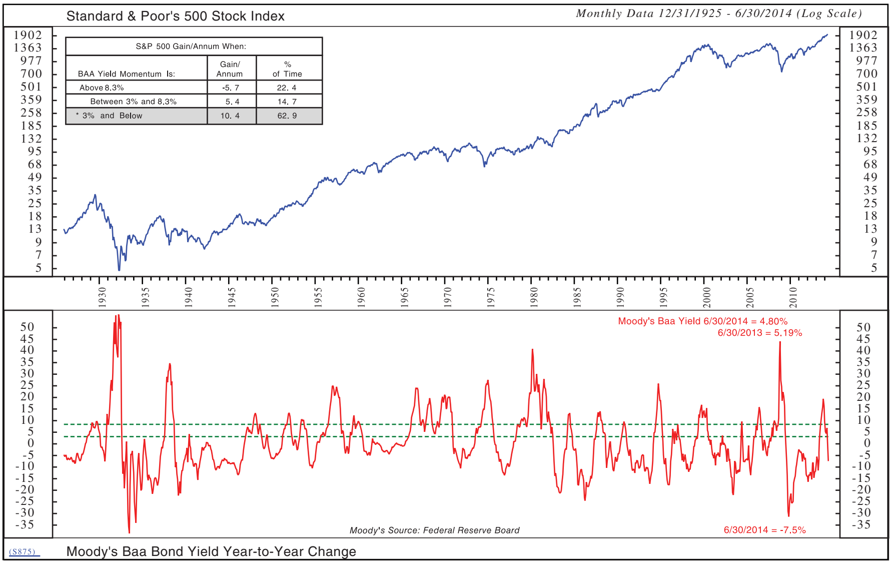
DJIA Gain/Annum When:

Real M2 Growth Is:	Gain/ Annum	% of Time
Above 6.65	11. 5	22. 0
* Between 1.35 and 6.65	7. 2	47. 3
1.35 and Below	0. 1	30. 6

FIGURE 2.3 **FED WATCH I (MONEY SUPPLY GROWTH): *TOP*, DJIA; *BOTTOM*, YEAR-TO-YEAR CHANGE IN REAL M2 (CONSTANT DOLLARS)**

the economy's ability to produce them. The resulting scarcity boosts prices. Thus, when the Fed decides it needs to restrain the economy, it raises rates and reduces the money supply to limit consumers' purchasing power. But higher interest rates and slower money-supply growth are bad for stock prices. So whenever the Fed is in a restrictive monetary posture, it also ends up restraining stock prices as well. When we see evidence that the Fed is turning more restrictive we become more cautious toward stocks. This is why we place considerable weight on the monetary indicators in our stock-market timing models.

A simple but effective monetary indicator can be constructed by determining the momentum, or rate of change, of interest rates. For example, one can simply compute the year-to-year change in the average yield on Baa-rated corporate bonds, as shown in Figure 2.4. When the current yield is materially higher than it was one year earlier it sends a negative warning signal for stock prices, as it implies that interest rates have risen enough to become restrictive. Conversely, when rates have fallen noticeably below the level of a year earlier that's a positive for stocks, because falling rates



S&P 500 Gain/Annum When:

BAA Yield Momentum Is:	Gain/ Annum	% of Time
Above 8.3%	-5. 7	22. 4
Between 3% and 8.3%	5. 4	14. 7
* 3% and Below	10. 4	62. 9

FIGURE 2.4 ***TOP*, S&P 500 INDEX; *BOTTOM*, MOODY'S YEAR-TO-YEAR CHANGE IN BAA BOND YIELD**

can stimulate the economy and offer less competition for investors' capital. For a more sensitive indicator, one could use a six-month, rather than a one-year, rate of change. This simple kind of monetary indicator can go a long way toward making sure that an investor is not swimming against the tide . . . and the Fed.

Economic Indicators

A broader category of external indicators can be classified simply as economic indicators. These track economic vitality or inflation. Examples are gross domestic product (GDP), the consumer price index (CPI), and surveys showing current and expected economic conditions (such as the monthly polls underlying The Conference Board's index of consumer confidence and the Institute for Supply Management's report on business activity). These indicators typically have the most effect on bond prices and interest rates, and thus on the actions of the Federal Reserve and on stock prices. In many cases, good economic news—such as high growth, high employment, or high confidence—is bad for bonds and stocks. Conversely, news of slower economic, wage, or employment growth, or lower consumer confidence can be good for both. Why this perverse reaction? Because strong economic reports are likely to prompt the Fed to worry about rising inflation, leading it to cool off the economy by raising rates and curbing money-supply expansion. That, in turn, would make stocks and bonds less attractive (see Figure 2.5).

Internal Indicators

All of these external indicators can be useful when applied correctly, but because they are, in effect, once or twice removed from the stock market itself, we don't rely exclusively on them. Because economic data is often revised, subject to estimation errors, or released with a lag, we typically want to anchor our models with data straight from the source—the price, breadth, and volume readings from the market itself. As noted earlier, we call all of the indicators based on stock prices and volume internal. But to get a really solid view of what is happening in the market, we might also use other types of internal indicators, along with various signal-generation techniques. The same principles apply to indicators for any other market as well (bonds, commodities, and so on).

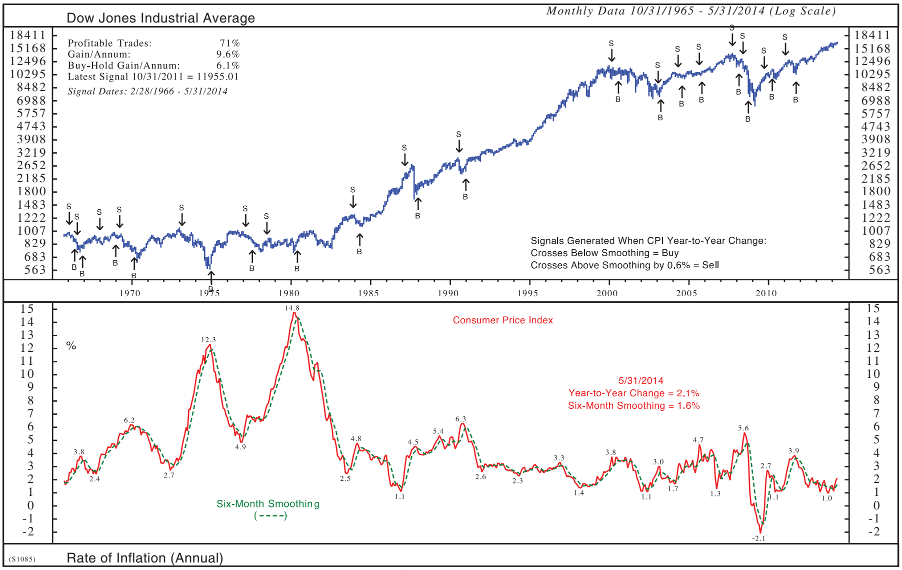


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FIGURE 2.5 ***TOP*, DJIA WITH BUY/SELL SIGNALS; *BOTTOM*, ANNUAL RATE OF INFLATION**

MOVING AVERAGES

One well-known way to get a handle on the underlying trend in stock prices is to use a *moving average* (*MA*). This is simply an average of the last, say, 50 days of prices. It's updated each day, by dropping the price from 51 days earlier and adding in the most recent day's quote. Then the average is recalculated.

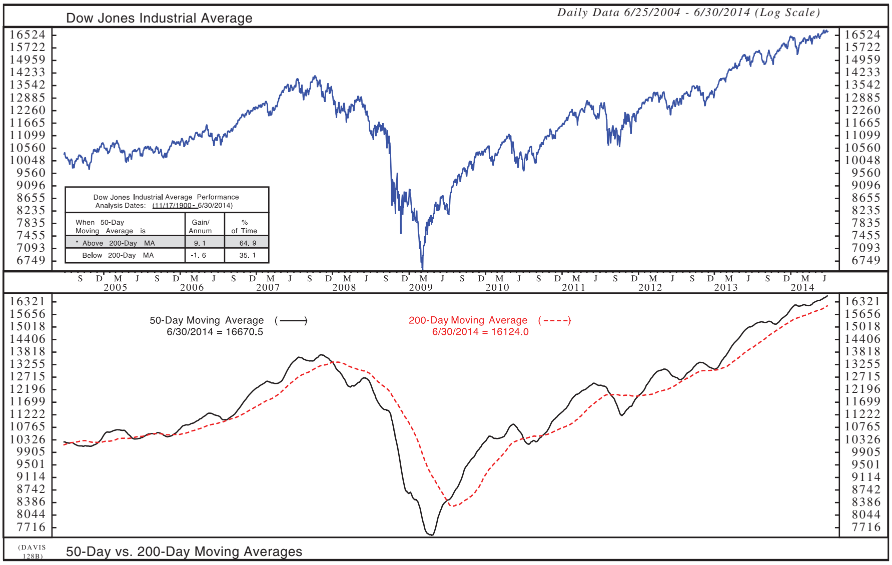
When plotted on a chart, this continuously updated fixed-period average *moves*, along with the actual price data; hence the name. What this technique does is smooth out the largely random short-term wiggles in the price of a stock or a market index, revealing the underlying trend. One can calculate a moving average using any number of periods. But the longer the time frame is, the more smoothing will occur and the less sensitive the results will be to the latest price changes. A short-term trader might use a five-day moving average to pick up the near-term trend, while a long-term investor might use a six-month moving average to pick up only larger, longer term moves and ignore shorter term fluctuations.

The moving average I just described (known as a simple moving average) has a potential drawback in that it applies equal weight to all of the prices it includes. But if the more recent data is the most important, one may want to use an average that applies more weight to the newest information and less to the older numbers. This is achieved by using a weighted moving average or an exponential moving average. Both calculate a moving average by placing more weight on recent observations. The actual calculations are a bit complicated and are available in many reference books. The important point is that, in some cases, variations on an indicator can improve performance. So, we use variations in our models as well.

CROSSINGS AND SLOPES

Once we have calculated a moving average, how can it be used to objectively generate signals about the direction of prices? One way is to just see if the current stock or index price is above or below the current moving average value. If it is above that value the trend can be considered up, and if the current price is below the moving average the trend can be considered down. We call this a *crossing* indicator. However, the price can whip back and forth around the moving average and thus change its signal too frequently. To get around that, a model can be built that recognizes signals, up or down, only if they're based on moves of a certain minimum size. Or, one can use both short- and longer term averages together. The short-term average smooths out the very short-term blips in prices but remains responsive to the latest price action, while the longer term average indicates the underlying trend. A change in trend is signaled when the short-term average (rather than the price itself) crosses above or below the longer term average. This reduces the frequency of *whipsaws*, or short-term signals caused by random volatility in prices (see the table in the top section of Figure 2.6, which shows how the 50- and 200-day moving averages impact DJIA performance going back to 1900).

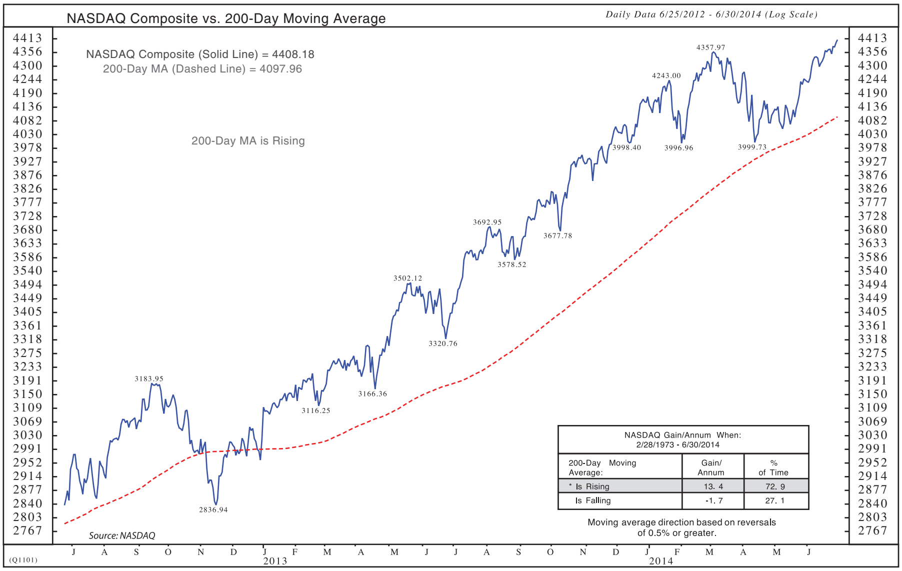
Another approach is to ignore the latest price and just watch the direction of the moving average itself. We consider this a *slope* indicator because we are measuring the moving average's direction or slope (when plotted on a chart). When the moving average rises a specified amount from a low (say, 5 percent), an uptrend is in place, while a decline of a specified amount from a peak indicates a downtrend. (Figure 2.7 shows a moving-average



Dow Jones Industrial Average Performance
Analysis Dates: (11/17/1900 - 6/30/2014)

When 50-Day Moving Average is	Gain/ Annum	% of Time
* Above 200-Day MA	9. 1	64. 9
Below 200-Day MA	-1. 6	35. 1

FIGURE 2.6 ***TOP*, DJIA 2004–2014; *BOTTOM*, 50-DAY VERSUS 200-DAY MOVING AVERAGES**



Source: NASDAQ

NASDAQ Gain/Annum When:
2/28/1973 - 6/30/2014

200-Day Moving Average:	Gain/ Annum	% of Time
* Is Rising	13. 4	72. 9
Is Falling	-1. 7	27. 1

Moving average direction based on reversals of 0.5% or greater.

FIGURE 2.7 **NASDAQ COMPOSITE VERSUS 200-DAY MOVING AVERAGE**

direction with a small slope for the NASDAQ.) By varying the length of the moving average and the amount that it must rise or fall to give a signal, the analyst can dictate the indicator's sensitivity (e.g., by making it send frequent signals for short-term traders or less frequent signals for longer term investors). We often use some combination of these moving-average indicators in our models.

Two other indicators that illustrate slope signals are very useful. Figure 2.8 uses a 5.5 percent rise on the NASDAQ 100 Index (NDX) to get a buy signal, and a 6.8 percent decline from a high to get a sell signal. Only 48 percent of the trades made with this indicator were profitable, but it cuts losses short and lets profits run, so it has made good money. Figure 2.9 uses a similar slope analysis on interest rates to generate buy and sell signals on the S&P 500.

One breadth indicator I have had good luck with is shown in Figure 2.10. I featured this on January 7, 2013, following a buy signal from a breadth thrust on January 4. Historically, it showed *no* losses one year after the buy signal. The indicator gives a buy whenever 90 percent of our database of institutional grade common stocks rises above their 50-day

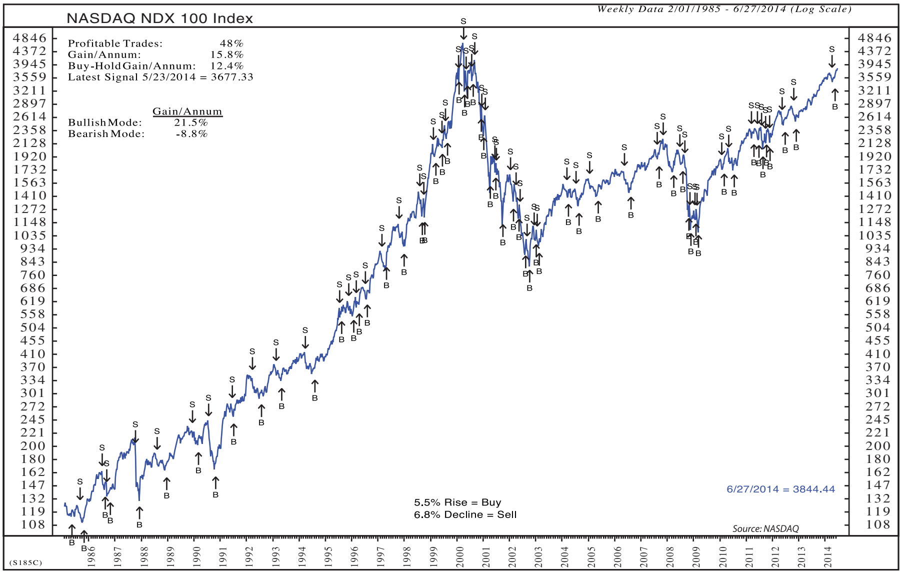


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FIGURE 2.8 **NASDAQ NDX 100 INDEX**

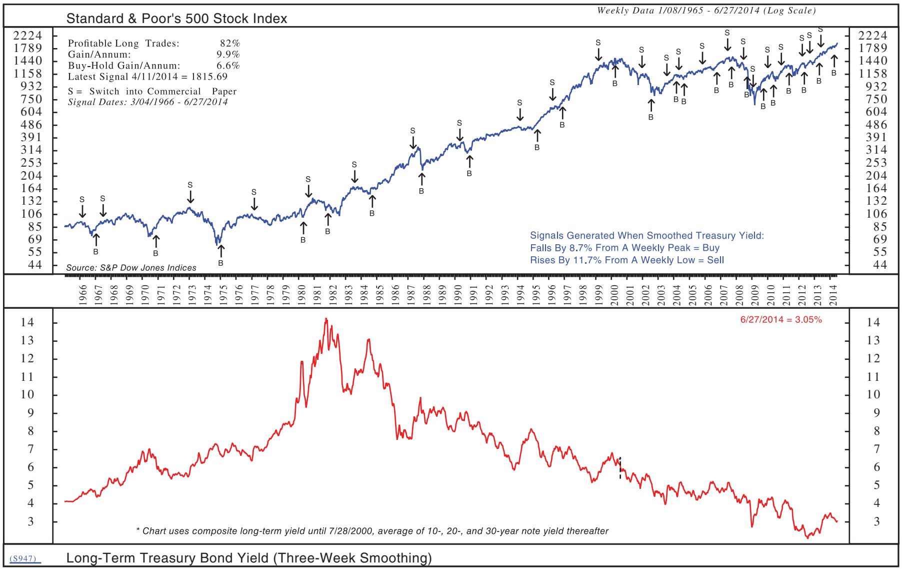

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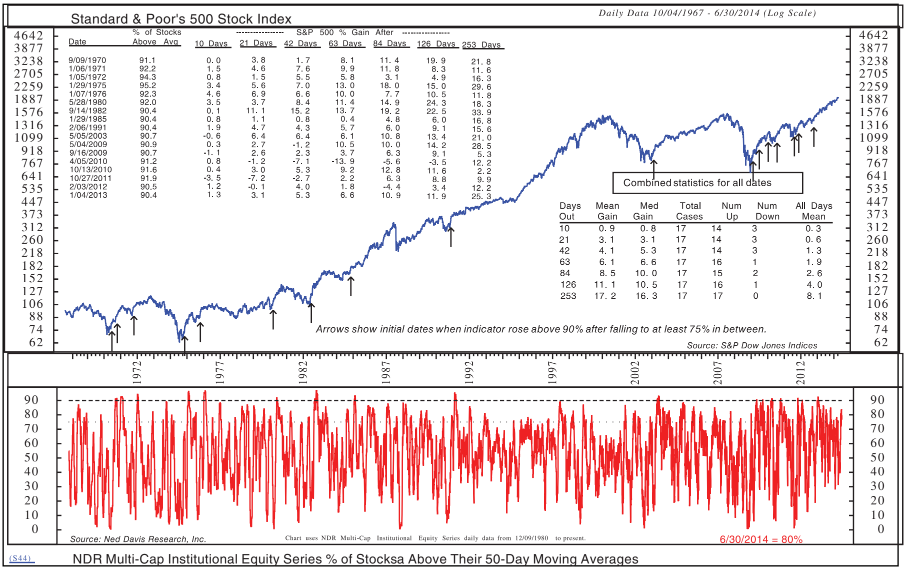
FIGURE 2.9

***TOP*, S&P 500 INDEX WITH BUY/SELL SIGNALS; *BOTTOM*, LONG-TERM TREASURY BOND YIELD (THREE-WEEK SMOOTHING)**

moving average. We call this a *breadth-thrust* buy signal. In my *Hotline* I said, "I generally try to 'trust the thrust' with such strong momentum, and I am very careful with overbought readings or excessive optimism when big momentum is strong on the upside." As can be seen on the chart, that January 4 buy signal hit a real bull's-eye! (Another breadth-thrust indicator, one with a longer record, is featured in the Fab Five model in the next chapter.)

Perhaps the granddaddy of breadth indicators, which uses things like advance and decline lines, new highs or new lows, up and down volume, and so on, is shown on Figure 2.11. It just tracks the number of NYSE issues at new 52-week lows each week as a percentage of issues traded. It goes back all the way to 1940! When there are a lot of new lows, the market has declined, on average. And when there are very few new lows, the market has little downside leadership and good breadth; in that case, the S&P 500 has advanced at double-digit rates more than 50 percent of the time. Make the breadth trend your friend.



Standard & Poor's 500 Stock Index

Daily Data 10/04/1967 - 6/30/2014 (Log Scale)

Date	% of Stocks Above Avg	S&P 500 % Gain After 10 Days	21 Days	42 Days	63 Days	84 Days	126 Days	253 Days
9/09/1970	91.1	0. 0	3. 8	1. 7	8. 1	11. 4	19. 9	21. 8
1/06/1971	92.2	1. 5	4. 6	7. 6	9. 9	11. 8	8. 3	11. 6
1/05/1972	94.3	0. 8	1. 5	5. 5	5. 8	3. 1	4. 9	16. 3
1/29/1975	95.2	3. 4	5. 6	7. 0	13. 0	18. 0	15. 0	29. 6
1/07/1976	92.3	4. 6	6. 9	6. 6	10. 0	7. 7	10. 5	11. 8
5/28/1980	92.0	3. 5	3. 7	8. 4	11. 4	14. 9	24. 3	18. 3
9/14/1982	90.4	0. 1	11. 1	15. 2	13. 7	19. 2	22. 5	33. 9
1/29/1985	90.4	0. 8	1. 1	0. 8	0. 4	4. 8	6. 0	16. 8
2/06/1991	90.4	1. 9	4. 7	4. 3	5. 7	6. 0	9. 1	15. 6
5/05/2003	90.7	-0. 6	6. 4	6. 4	6. 1	10. 8	13. 4	21. 0
5/04/2009	90.9	0. 3	2. 7	-1. 2	10. 5	10. 0	14. 2	28. 5
9/16/2009	90.7	-1. 1	2. 6	2. 3	3. 7	6. 3	9. 1	5. 3
4/05/2010	91.2	0. 8	-1. 2	-7. 1	-13. 9	-5. 6	-3. 5	12. 2
10/13/2010	91.6	0. 4	3. 0	5. 3	9. 2	12. 8	11. 6	2. 2
10/27/2011	91.9	-3. 5	-7. 2	-2. 7	2. 2	6. 3	8. 8	9. 9
2/03/2012	90.5	1. 2	-0. 1	4. 0	1. 8	-4. 4	3. 4	12. 2
1/04/2013	90.4	1. 3	3. 1	5. 3	6. 6	10. 9	11. 9	25. 3

Combined statistics for all dates

Days Out	Mean Gain	Med Gain	Total Cases	Num Up	Num Down	All Days Mean
10	0. 9	0. 8	17	14	3	0. 3
21	3. 1	3. 1	17	14	3	0. 6
42	4. 1	5. 3	17	14	3	1. 3
63	6. 1	6. 6	17	16	1	1. 9
84	8. 5	10. 0	17	15	2	2. 6
126	11. 1	10. 5	17	16	1	4. 0
253	17. 2	16. 3	17	17	0	8. 1

Arrows show initial dates when indicator rose above 90% after falling to at least 75% in between.

Source: S&P Dow Jones Indices

Source: Ned Davis Research, Inc.

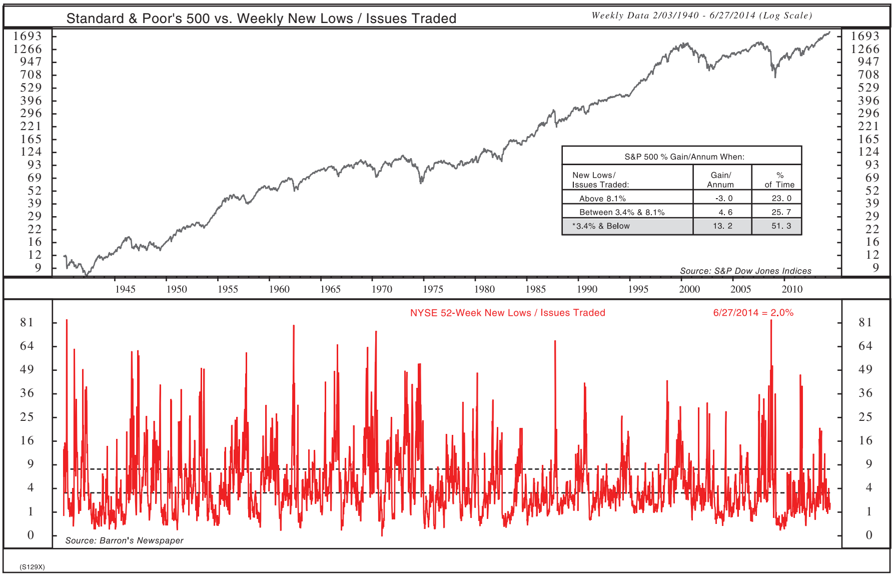
Chart uses NDR Multi-Cap Institutional Equity Series daily data from 12/09/1980 to present.

6/30/2014 = 80%

(S44)

NDR Multi-Cap Institutional Equity Series % of Stocksa Above Their 50-Day Moving Averages

FIGURE 2.10 ***TOP***, **S&P 500 INDEX;** ***BOTTOM***, **MULTI-CAP INSTITUTIONAL EQUITY SERIES PERCENTAGE OF STOCKS ABOVE THEIR 50-DAY MOVING AVERAGES**



Standard & Poor's 500 vs. Weekly New Lows / Issues Traded

Weekly Data 2/03/1940 - 6/27/2014 (Log Scale)

S&P 500 % Gain/Annum When:		
New Lows/ Issues Traded:	Gain/ Annum	% of Time
Above 8.1%	-3. 0	23. 0
Between 3.4% & 8.1%	4. 6	25. 7
*3.4% & Below	13. 2	51. 3

Source: S&P Dow Jones Indices

NYSE 52-Week New Lows / Issues Traded

6/27/2014 = 2.0%

Source: Barron's Newspaper

(S129X)

FIGURE 2.11 ***TOP***, **S&P 500 INDEX;** ***BOTTOM***, **NYSE 52-WEEK NEW LOWS/ISSUES TRADED**

MOMENTUM

Another important type of internal indicator is *momentum*. The term typically applies to physical objects, and, indeed, stock prices exhibit characteristics similar to those of objects that are in motion. Momentum is typically measured as a rate of change, as in the distance an object travels in a given period, or the amount by which stock prices rise or fall in a given time span. To calculate a 10-day momentum, simply divide the current price by the price 10 days ago and subtract 1 from the result. A positive value indicates that the price trend is up, and a negative value implies a downtrend. We also look at how high or low the momentum is, because when a market shows a significant *thrust*, or sharp movement in one direction (an extremely high or low momentum reading), it often indicates that prices will continue in the same direction for a while, much as an object hurled into the air will keep rising for a while due to its momentum before it slows and tumbles back to earth (see Figure 2.10). So a very high momentum reading implies that prices will continue on an upward path for some time, while a very low (negative) reading implies that a downtrend is under way. The chart waits for a clear reversal from extreme readings to show an objective change in momentum (see Figure 2.12).

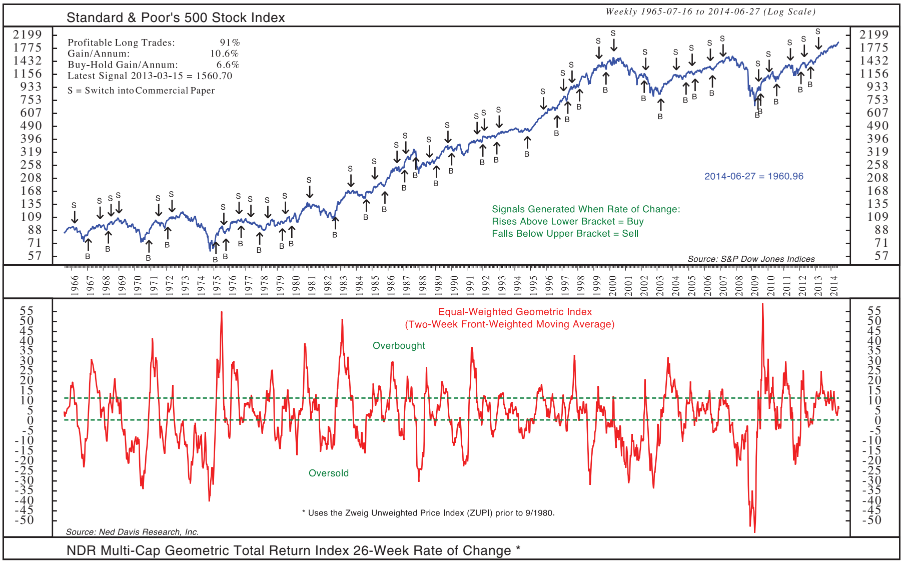


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FIGURE 2.12 NASDAQ COMPOSITE VS. 200-DAY MOVING AVERAGE

Momentum can be applied to external indicators, too. We can use the momentum of bond prices to give signals for stocks, or the momentum of the CRB (Commodity Research Bureau) Commodity Price Index to give signals for bonds or stocks. Also, because extreme momentum cannot be maintained indefinitely, and extreme readings are often followed later by reversals, we can use *brackets*, or specified levels of momentum (up or down), to indicate when an extreme has been reached. An extreme by itself may be useful for signals, or we can set up the indicator so that it gives a signal when an extreme has been hit *and then reverses* back below the bracket level to indicate that the momentum has been spent and a reversal is likely.

PUTTING INDICATORS TOGETHER

We've now seen a variety of indicators that can be used in a market-timing or asset-allocation model. As mentioned, no single indicator or data series can consistently provide a reliable view of something as complex as the stock or bond market. So in the same way that companies are often run by a group of informed directors, we put a variety of individual indicators into a model to produce a *consensus* (composite) view of the market. That way, if any one indicator is ineffective or gets out of sync with the market it won't throw the investor completely off course, since the other indicators in the model will likely override the erroneous one.

The simplest way to create a model from a collection of separate indicators, and the way we often do it at Ned Davis Research, is to just determine whether each indicator is bullish, bearish, or neutral. Then we assign a +1 for each bullish indicator, a –1 for each bearish indicator, and 0 for the neutral indicators, and add up the results. If a model has 20 individual indicators and 12 are bullish, 6 are bearish, and 2 are neutral, the composite model reading would be +6. The analyst could then test the model's readings over time against the market's performance and determine if it provides good signals and what the optimum parameters are for taking action. For example, testing might indicate that it's best to buy shares when the model rises to +2 or more, and to sell only when it falls to –2 or below.

Ideally, a composite model will include a variety of indicators, including trend, monetary, and sentiment gauges, so that a complete picture of market conditions emerges, and no single type of indicator carries too much weight. Thus, building a model is a bit like building an investment portfolio; it's generally wise to diversify. At Ned Davis Research, our experience and long-standing focus on risk control and avoiding major losses has led us to usually require that at least half of a composite model's indicators be trend-oriented, or internal. This ensures that the model will always be forced to stay with the trend of the market itself.

One key issue that a model builder must consider is *overoptimization* or excessive *curve-fitting*. With enough data and many permutations and combinations of indicators, a determined analyst with a computer can find some mixture of indicators that appears to predict the stock market (or almost anything else) with very high accuracy *in hindsight* (meaning the information *fits the curves* of past stock price movements very closely). But because the future never looks exactly like the past, indicators or models that are created (*fitted*) based on the exact sequence of prices seen in the past invariably perform much worse in the future, as they haven't picked up a real, repeatable pattern or trend. Because computers can try literally millions of possible data combinations and match them to a set of historical prices, a few indicators will pop up, purely by chance, that will show extraordinarily good results and seem to be the holy grail of investing. But any results that fit the past too perfectly are unlikely to fit the future nearly so well. They should be examined very carefully or discarded.

One way to try to avoid over-fitting indicators or models is to analyze and test them on a subset of the available historical data (such as the first 10 years of a 20-year span), set the indicator's parameters, and then test it on a different subset (the next 10 years) to see if both results are similar. If they are, the indicator is more likely to be reliable. If they aren't, the correlation with past data probably has been found by chance. The indicator is more lucky than good.

Other ways to determine if an indicator's or model's results are likely to be repeated in the future is to examine all of the signals it gives. One thing to check is whether a good performance is due entirely to one or a few big gains. An example would be an indicator that just happened to be out of the stock market, or short the market, during the historic stock market crash of October 19, 1987. If the indicator's other signals weren't particularly good, one would have much less confidence in its ability to provide consistently accurate future results. Similarly, any indicator that gives only a very few signals over the historical testing period must be used with caution, even if the results look good. The fewer the signals, the higher the probability that the results are due to luck.

Ideally an indicator or model should provide useful information during *any* period of reasonable length, rather than just in certain periods or under specific conditions. However, an indicator that works only under certain circumstances can still be useful, so long as one does not rely on it too much. Measures designed to highlight extremes, for example, such as very high or low price momentum or investor sentiment readings, can be very valuable *when they are flashing a signal*. But during periods when the indicator is not at an extreme and is just sitting in the middle of its typical range, it should be ignored. This is why it's important to create a composite model that aggregates the readings of many different indicators, and why we often allow individual indicators within a model to be neutral or have no influence when they have nothing to say.

CONCLUSION

Our primary goal in creating a model is to offer investors a testable anchor for measuring risk and reward and making sound asset-allocation decisions. Using objective, quantitative information limits the potential for letting psychological biases (which everyone has) block the correct choices. Subjective opinions and gut feel are often erroneous, inconsistent, and unreliable over time. It's very easy for an individual to get trapped in a subjective market view and stubbornly refuse to do the smart thing. A good model can provide the discipline and confidence needed to navigate the perilous waters of investing.

In summary, the main elements of creating and using a market-timing/asset-allocation model are:

- Gather as much objective, quantitative data as possible.
- Make certain that the information is accurate and can be updated in a relatively timely manner.
- Test individual data series and the various manipulations of the data mentioned above against the market to determine if they have any potential predictive value. Make sure not to over-fit the data to historical prices.

- Select different types of indicators (e.g., trend, monetary, sentiment, etc.) based on their historical reliability and their ability to complement one another.
- Combine the indicators into a model that gives a single composite reading. The indicators can be weighted equally or by their relative importance or historical accuracy.
- Test the resulting model to see if it provides reliable results.
- *Use the model as the basis for disciplined investing.*

CHAPTER 3

A Stock Market Model

LOREN FLATH

A STOCK MARKET MODEL

I can almost hear Ned telling his partner, Eddie Mendel, at the dawn of Ned Davis Research back in 1979, that he would need only one programmer for one year. For over a decade, Ned had been charting his favorite indicators by hand, and the work was becoming overwhelming. There were many more indicators to chart and not enough time in the day to do so. And as Ned points out in Chapter 1, he not only needed better charting, but more importantly, he needed to replace subjective trading decisions with a more objective approach. So he hired a programmer and challenged him to create software that could not only draw effective charts, but could also analyze markets in a rather unusual way. Together they developed the concept of *timing models*, and these models formed the basis of NDR's core positions in a variety of markets and economies. It turns out, however, that predicting that he'd need just one programmer for one year was Ned's worst call. Today we have an IT staff of nearly 30!

As Ned has pointed out many times, the bane of the investor is the Big Mistake. On the following pages I detail the makeup of one of our major models, the Fab Five. The goal of any NDR model is to keep us open-minded and disciplined, and to let our profits run while avoiding big mistakes. We realize models can be quite fickle, no matter what their ingredients are or how they are built. This model is no exception (there are no exceptions!). The game is to recognize potential capriciousness and pay attention to the effectiveness of each individual component and to the overall mix of indicators. One must always be vigilant when depending on models.

The Fab Five is an environmental model that uses what we call modes. Its job is to assemble the major internal and external factors that affect markets and combine them to produce a single objective verdict: bearish, neutral, or bullish. Offering only three possibilities might seem a bit too simplistic, like asking someone to rate a product on a scale of 1 to 3, instead of 1 to 10. But the goal is to keep things simple, and as you will see later, each mode can be open to subtle interpretation. To quote Ned, "The evidence is rarely black or white—rather, shades of gray."

Just what is an environmental model? In essence, it's one that can keep risk at arm's length without sacrificing too much on the long side. Such models effectively gauge how good conditions are for investing: do we have calm waters or are we about to enter the lower 40 latitudes? An environmental model takes into account what the Federal Reserve is doing, what the so-called smart money is doing, how speculators are feeling, what interest rates and inflation are doing, and, above all else, what the primary trend is. Using a weight-of-the-evidence approach gives us an educated feel for the risks in the market. The environmental model's job is not necessarily to give concrete buy and sell signals. Its job is to measure the level of risk in the market.

Before we examine the Fab Five in detail, let's briefly discuss some of the indicators we use to build models.

We look at two types of indicators: internal and external.

Internal indicators relate to the price action of a market or index and include the usual list of suspects, along with a multitude of variations: moving averages, momentum, advances and declines, and volume trends. All of these can be found in the bottomless bag of tools used by the creative technical analyst. I've seen enough momentum tricks alone to last a career. Ditto for moving averages. There seems to be no end of possibilities when it comes to manipulating an index or its components in order to come up with a so-called objective opinion on a market's direction.

We break down internal indicators into two distinct types: trend following and trend sensitive.

Trend-following indicators keep us in harmony with the market's primary trend, and with enough weight in a model they act as our stop-loss when needed. Used well, they can help investors let profits run and cut losses short. These indicators include moving-average crosses and slopes and some measures of momentum, used either alone or aggregated. Trend-following indicators are rarely neutral and can generate great returns, but sometimes give notoriously false signals. By their very nature they are late. Consequently, they require patience.

Trend-sensitive indicators, also known as overbought-oversold indicators, include mean reversion, momentum variations, and deviation from the trend. These indicators have a tendency for picking tops and bottoms and can influence models when price trends reach extremes. They are very accurate but not adept at generating significant gains. Since they spend a good part of the time in the neutral zone they tend to work well in multi-indicator models asserting themselves only at potential extremes.

Rounding out internal indicators is market breadth, an extremely useful tool in determining the technical environment. At NDR we gauge this by watching A/D data (advances, declines, unchanged), new highs and lows, the percent of stocks in a universe meeting a specified criteria (e.g., above or below a moving average), volume data (advancing and declining volume), and combinations of A/D and volume. Over the years we've developed our own stock database. We use only common shares for our calculations in order to get a pure view of the stock market that's unsullied by closed-end funds, preferred stocks, structured products, and so on. One day recently, 3,164 securities were being actively traded on the New York Stock Exchange but only 1,965 of them were common stocks. In fact, nearly 40 percent of the actively traded securities listed on the Big Board aren't common stocks.

External indicators include anything outside of price action: the monetary environment, crowd psychology, valuation, and economic conditions. At NDR we tend to lump valuation and crowd psychology in the sentiment category. We also tend to include economic indicators that can influence markets (e.g., inflation) in the monetary category and sometimes, to a lesser extent, the sentiment category. So basically we're looking at two sets of external indicators: monetary and sentiment. To analyze them, we can use the identical arsenal of measures we use for internal indicators, including moving averages, momentums, and deviations from trend.

My introduction to model building started in 1984, when Ned taught me the basics of creating what he called timing models. I was introduced to his major models with names like Big Mo, Little Mo, Lexi, Bondito, and

Bondo Grande. There was also the Economic-Timing Model and the Inflation-Timing Model. He had models on 600 stocks, on gold, all the major currencies, crude, you name it. I was dizzy looking at all these models, and yet his approach to constructing them was amazingly simple: find some indicators that work, give them all equal weight by assigning +1, 0, or –1 to each, and add them up. I had cut my teeth on much more complicated systems. This was a whole new ball game. I came to believe that Ned had invented a simplified version of multiple linear regression, which makes predictions based on the relationships between dependent and independent variables. And the beauty was not only in the methodology but in the results. Here, I thought, was the ultimate KISS—keep it simple, stupid—system. But as it turns out, although the concept is quite uncomplicated the process can be complex and time-consuming. The devil is in the details. Done poorly, it's garbage in, garbage out.

I quickly learned the ropes and spent some serious time tweaking software and acquiring faster and faster computers (the difference in computing power between the machines back then and those available now is roughly a factor of 3,500—and today's computers are a whole lot cheaper!). My objective was to keep several computers busy crunching models 24/7, in the hope of building more and better models while expanding our universe of trading vehicles. All of this was fine, but no matter how much output the computers generated, the process still required a researcher to hand pick the indicators and the final model. Obviously this was a limiting factor. By the late 1980s I had written software to do the actual picking, which paved the way for a soup-to-nuts system for cranking out models. I was quite proud of myself and began building individual equity models.

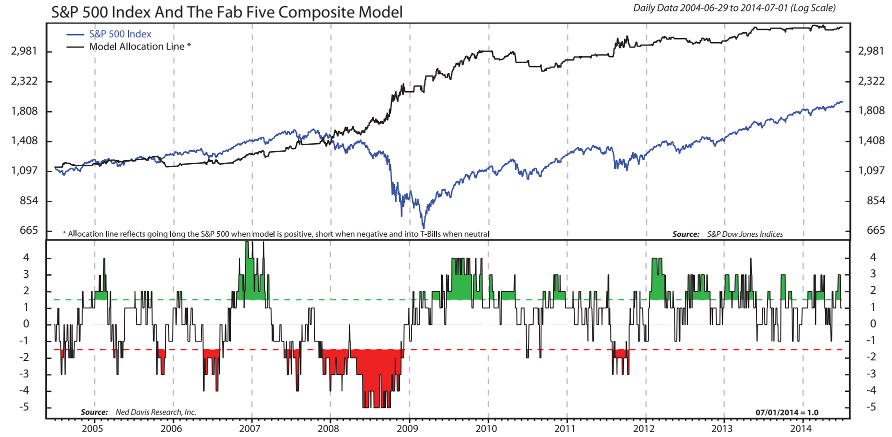
However, a number of these models didn't hold up very well; some incurred pretty big losses. To remedy the problems I tweaked the programs. For example, we limited the amount of relative-strength indicators because even as a stock's price is falling, an RS (relative strength) line can rise. Another problem was insufficient diversity in the mix of indicators, which led to an overweighted indicator theme going bad and taking the model with it. In addition, too many models were accurate but lost money. And then there was the occasional so-called creative researcher who thought that making calls by pairing, say, IBM stock with COMEX (Commodity Exchange) gold was a cool idea (the old throw-it-at-the-wall-and-see-what-sticks approach).

Finally, I realized that to build a truly diverse, objective model requires finesse, diligence, a bit of artistic panache, and a strong knowledge of macroeconomic relationships, ranging from company fundamentals to macroeconomic fundamentals to Fed watching. Ironically, computing power takes a back seat in building good models.

OVERVIEW OF THE FAB FIVE

To create the Fab Five, we combined individual models covering our favorite areas of the market. The name comes from the famous basketball team that my alma mater, the University of Michigan, had in the early 1990s. (Ned is a huge basketball fan; we joke that if he fell and cracked open his head little basketballs would bounce out.) However, the model has only four components—sentiment, monetary readings, Combo, and the tape—but the tape is given double weight. I'll start with it because it accounts for two-fifths of the Fab Five.

Figure 3.1 shows the past 10 years of the Fab Five model. In the following pages, each component of the model is presented in the same fashion.



1981-12-31 to 2014-07-01		
Fab Five Model	**% Gain/ Annum**	**% of Time**
Above 1.5	27.56	40.00
* Between -1.5 and 1.5	8.96	42.26
Below -1.5	-23.77	17.74

2004-06-29 to 2014-07-01		
Fab Five Model	**% Gain/ Annum**	**% of Time**
Above 1.5	24.51	31.75
* Between -1.5 and 1.5	10.48	48.88
Below -1.5	-27.82	19.38

Years: 1 3 5 10 20 Max

Model Component	Chart	Model Reading
Tape	DAVIS501	**NEUTRAL**
Sentiment	DAVIS502	**BEARISH**
Monetary	DAVIS503	**BULLISH**
Combo	DAVIS504	**BULLISH**

DAVIS500

Please see important disclaimer at the beginning of the book.

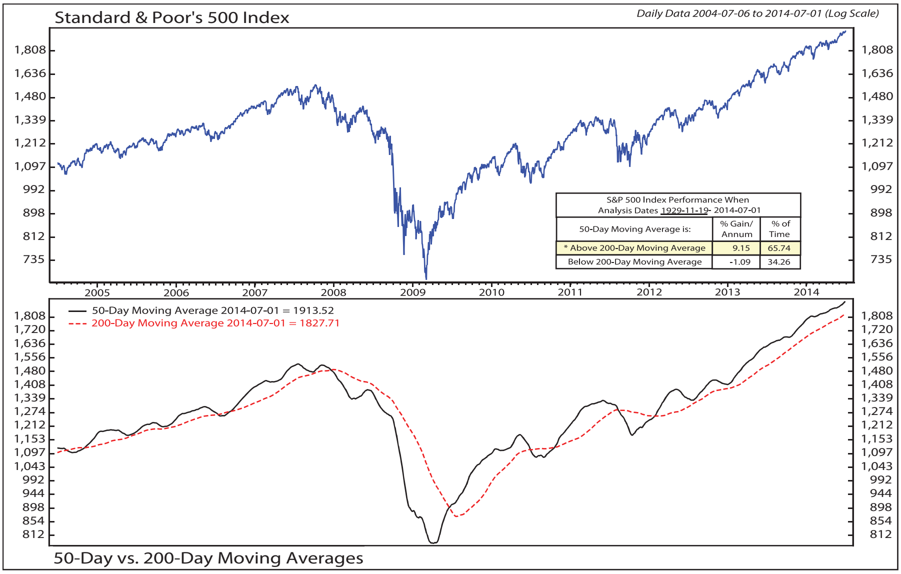
FIGURE 3.1 ***TOP*, S&P 500 INDEX AND MODEL ALLOCATION LINE; *BOTTOM*, FAB FIVE COMPOSITE MODEL**

The mode boxes at the bottom summarize the results for the full date range as well as for the past 10 years. The top clip has an additional series on it that represents an equity line based on going long the S&P 500 when the model is above the upper bracket, going into T-bills when the model is between the brackets, and shorting the S&P 500 when the model is below the lower bracket. This equity line is only for perspective; it's there to give a close-up view of how the model has behaved in the past. The stats tell a story, but not the whole story.

TAPE COMPONENT

There are seven individual indicators in the tape component. As with all the other Fab Five components, and in keeping with our KISS philosophy, these indicators are each assigned −1, 0, or +1, and the result is produced through simple addition.

The first indicator in the tape component is shown in Figure 3.2. This simple, trend-following indicator is what technical analysts call a golden



S&P 500 Index Performance When Analysis Dates 1929-11-19- 2014-07-01

50-Day Moving Average is:	% Gain/ Annum	% of Time
* Above 200-Day Moving Average	9.15	65.74
Below 200-Day Moving Average	-1.09	34.26

DAVIS128A

FIGURE 3.2 ***TOP*, S&P 500 INDEX; *BOTTOM*, 50-DAY VERSUS 200-DAY S&P 500 MA**

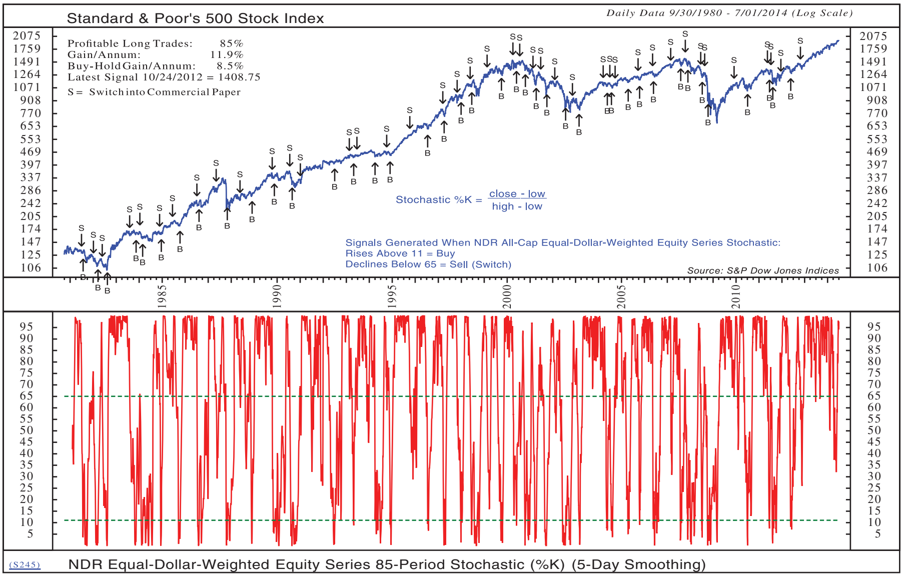
cross (a point at which a short-term moving average breaks above a long-term average, signaling a bull market to come). It is positive when the 50-day moving average of the S&P 500 is above its 200-day average and negative otherwise.

The box on the top part of the chart summarizes the indicator's performance since 1929. At Ned Davis Research the box is called a mode bat. Ned invented this in the late 1980s, and it shows what the returns have been when buying during the bullish mode (when the 50 is above the 200) or the bearish mode (when the 50 is below the 200). It tells us that the 50-day has been above the 200-day nearly two-thirds of the time and that during those times the S&P 500 on a price-only basis has returned 9.1 percent per annum. When the 50-day has been below the 200-day the market has retreated at a 1.1 percent annual rate. Not shown in the mode bat are two other interesting statistics: a buy-and-hold approach would have generated a 5.5 percent yearly return, and reinvesting dividends while in the bullish mode would have produced a 13 percent return. Obviously an indicator like this is long-term: designed to catch the major moves.

The indicator in the chart in Figure 3.3 is a typical trend-sensitive indicator and is called a stochastic, which measures variation in momentum. The idea is to look back a set number of market days, pick the low and the high in that period, and calculate where the market's current value is relative to that range. The result is a percent; 100 percent is a new high, while 0 percent is a new low. The ambivalence of this indicator is reflected in whether you want to catch a thrust early and go long (called a bracket) or wait until the thrust is over and go short when it starts to fall (called a reverse bracket). It can be used either way, depending on the number of market days being looked at, whether a moving average is applied, and how wide the brackets are.

This chart's signals are summarized in what's known as a batting average, or bat. NDR, since its inception in 1980, has been using bats to evaluate indicators. The factors used include how accurate the long signals have been and what the overall annualized return has been. To illustrate a practical use of this indicator, Figure 3.3 assumes that on sell signals for stocks an investor will buy T-bills rather than short the market.

This 85-day stochastic is derived from NDR's All-Cap Equal-Weighted Index, based on our full Broad Market Equity Series universe. It is equally weighted and rebalanced quarterly. The result is smoothed with a five-day



Signals Generated When NDR All-Cap Equal-Dollar-Weighted Equity Series Stochastic:
Rises Above 11 = Buy
Declines Below 65 = Sell (Switch)

Source: S&P Dow Jones Indices

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FIGURE 3.3 ***TOP***, **S&P 500 INDEX WITH STOCHASTIC INDICATORS;** ***BOTTOM***, **85-PERIOD STOCHASTIC NDR EQUAL-DOLLAR-WEIGHTED EQUITY SERIES (FIVE-DAY SMOOTHING)**

moving average and has brackets at 11 and 65. As the chart points out, a buy signal is generated when the smoothed result dips below then rises above 11, while a switch to T-bills is signaled when the indicator crosses above and then below 65. At NDR we call this method of signal generation a reverse bracket.

To generate a signal, the indicator either has to cross above the upper bracket and then cross below the upper bracket (sell) or cross below the lower bracket and then cross above the lower bracket (buy).

The indicator also can go neutral: if a signal is given across the upper bracket, that signal stands until either the indicator drops below the bottom bracket and then crosses back above the bottom bracket, or the indicator crosses back above the upper bracket before crossing the lower bracket. If the latter happens, the indicator becomes neutral. I call that an *oops* signal. The bottom bracket is treated the same way.

As it turns out, the reverse bracket indicator has been negative only 19 percent of the time (it throws out a lot of oops signals), neutral 25 percent of the time (mostly from the sell side), and positive 56 percent of the time. As of this writing, the indicator is neutral and therefore has no influence on the tape component.

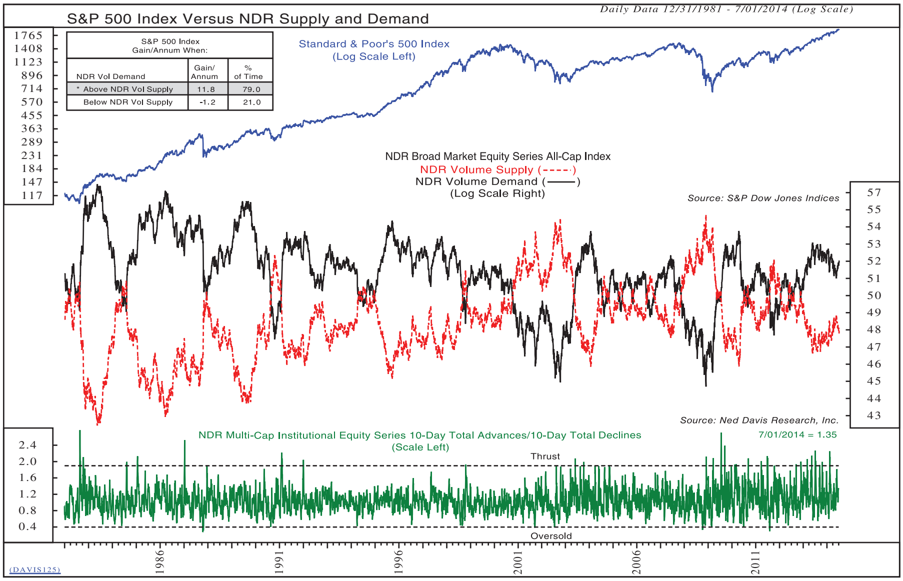
Moving away from direct price action, we turn to one of our favorite broad-market tool sets: breadth. This indicator is one of Ned's favorites. It's based on another fairly simple yet effective concept: evaluating the impact of volume supply and volume demand.

If a stock advances on the day, we consider all of the volume traded on that day to be advancing volume—this is the demand side. If a stock falls on the day, the volume is tallied on the declining, or supply side. If a stock's price stays steady, all of its trading volume is considered unchanged and is discarded in our calculations. (The percentage of unchanged stocks on a typical day has fluctuated around 1.5 percent since decimalization in 2001. Prior to 1997, when stocks traded in eighths, nearly one in five stocks were unchanged on the day!)

To stabilize the volatility and gain a useful perspective, we typically sum both supply and demand over a substantial period ranging from days to months. The percent of summed supply volume plus the percent of summed demand volume always adds to 100. They meet in the middle at 50 percent. The universe we are using for these calculations is the NDR Broad Market Equity Series All-Cap Index. This index represents 99 percent of the market value of the common shares trading on the big three exchanges. Its history goes back to September 1980.

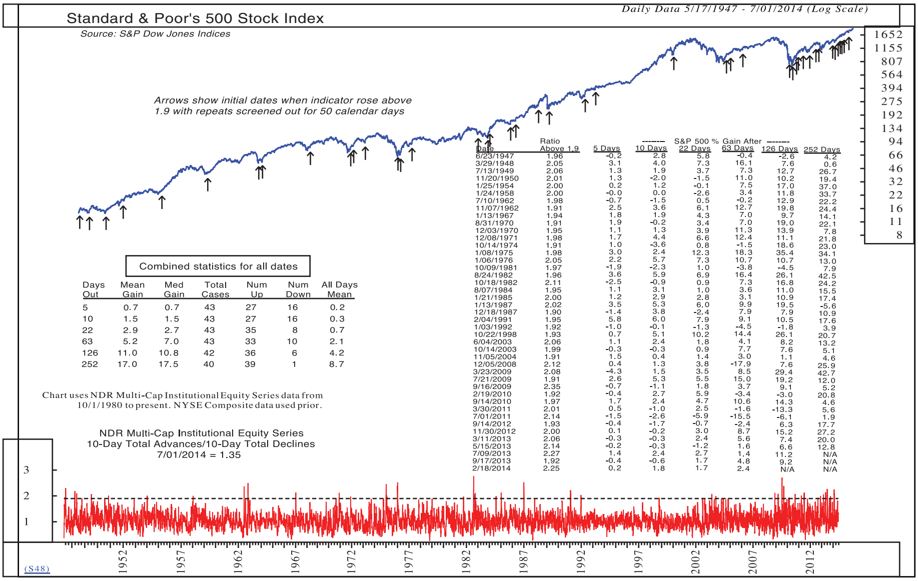
The mode box in Figure 3.4 shows that when demand has been above supply, as it has been 79.0 percent of the time, the S&P 500 has advanced at 11.8 percent a year. But when supply is above demand, the market retreats 1.2 percent per annum. This indicator's contribution to the Fab Five tape component is +1 when demand is above supply and –1 otherwise.

There are many ways to look for excitement in the stock market: exuberance, whether rational or irrational, can be measurable. A couple of our favorite indicators look at the relationship between advancing and declining volume, or advances versus declines. Figure 3.5 evaluates the ratio of advances to declines. The ratio is actually a 10-day sum of NDR Multi-Cap



S&P 500 Index Gain/Annum When:		
NDR Vol Demand	Gain/ Annum	% of Time
* Above NDR Vol Supply	11.8	79.0
Below NDR Vol Supply	-1.2	21.0

FIGURE 3.4 S&P 500 INDEX VERSUS NDR SUPPLY AND DEMAND



Arrows show initial dates when indicator rose above 1.9 with repeats screened out for 50 calendar days

Date	Ratio Above 1.9	5 Days	10 Days	22 Days	63 Days	126 Days	252 Days
			------- S&P 500 % Gain After -------				
6/23/1947	1.96	-0.2	2.8	5.8	-0.4	-2.6	4.2
3/29/1948	2.05	3.1	4.0	7.3	16.1	7.6	0.6
7/13/1949	2.06	1.3	1.9	3.7	7.3	12.7	26.7
11/20/1950	2.01	1.3	-2.0	-1.5	11.0	10.2	19.4
1/25/1954	2.00	0.2	1.2	-0.1	7.5	17.0	37.0
1/24/1958	2.00	-0.0	0.0	-2.6	3.4	11.8	33.7
7/10/1962	1.98	-0.7	-1.5	0.5	-0.2	12.9	22.2
11/07/1962	1.91	2.5	3.6	6.1	12.7	19.8	24.4
1/13/1967	1.94	1.8	1.9	4.3	7.0	9.7	14.1
8/31/1970	1.91	1.9	-0.2	3.4	7.0	19.0	22.1
12/03/1970	1.95	1.1	1.3	3.9	11.3	13.9	7.8
12/08/1971	1.98	1.7	4.4	6.6	12.4	11.1	21.8
10/14/1974	1.91	1.0	-3.6	0.8	-1.5	18.6	23.0
1/08/1975	1.98	3.0	2.4	12.3	18.3	35.4	34.1
1/06/1976	2.05	2.2	5.7	7.3	10.7	10.7	13.0
10/09/1981	1.97	-1.9	-2.3	1.0	-3.8	-4.5	7.9
8/24/1982	1.96	3.6	5.9	6.9	16.4	26.1	42.5
10/18/1982	2.11	-2.5	-0.9	0.9	7.3	16.8	24.2
8/07/1984	1.95	1.1	3.1	1.0	3.6	11.0	15.5
1/21/1985	2.00	1.2	2.9	2.8	3.1	10.9	17.4
1/13/1987	2.02	3.5	5.3	6.0	9.9	19.5	-5.6
12/18/1987	1.90	-1.4	3.8	-2.4	7.9	7.9	10.9
2/04/1991	1.95	5.8	6.0	7.9	9.1	10.5	17.6
1/03/1992	1.92	-1.0	-0.1	-1.3	-4.5	-1.8	3.9
10/22/1998	1.93	0.7	5.1	10.2	14.4	26.1	20.7
6/04/2003	2.06	1.1	2.4	1.8	4.1	8.2	13.2
10/14/2003	1.99	-0.3	-0.3	0.9	7.7	7.6	5.1
11/05/2004	1.91	1.5	0.4	1.4	3.0	1.1	4.6
12/05/2008	2.12	0.4	1.3	3.8	-17.9	7.6	25.9
3/23/2009	2.08	-4.3	1.5	3.5	8.5	29.4	42.7
7/21/2009	1.91	2.6	5.3	5.5	15.0	19.2	12.0
9/16/2009	2.35	-0.7	-1.1	1.8	3.7	9.1	5.2
2/19/2010	1.92	-0.4	2.7	5.9	-3.4	-3.0	20.8
9/14/2010	1.97	1.7	2.4	4.7	10.6	14.3	4.6
3/30/2011	2.01	0.5	-1.0	2.5	-1.6	-13.3	5.6
7/01/2011	2.14	-1.5	-2.6	-5.9	-15.5	-6.1	1.9
9/14/2012	1.93	-0.4	-1.7	-0.7	-2.4	6.3	17.7
11/30/2012	2.00	0.1	-0.2	3.0	8.7	15.2	27.2
3/11/2013	2.06	-0.3	-0.3	2.4	5.6	7.4	20.0
5/15/2013	2.14	-0.2	-0.3	-1.2	1.6	6.6	12.8
7/09/2013	2.27	1.4	2.4	2.7	1.4	11.2	N/A
9/17/2013	1.92	-0.4	-0.6	1.7	4.8	9.2	N/A
2/18/2014	2.25	0.2	1.8	1.7	2.4	N/A	N/A

Combined statistics for all dates

Days Out	Mean Gain	Med Gain	Total Cases	Num Up	Num Down	All Days Mean
5	0.7	0.7	43	27	16	0.2
10	1.5	1.5	43	27	16	0.3
22	2.9	2.7	43	35	8	0.7
63	5.2	7.0	43	33	10	2.1
126	11.0	10.8	42	36	6	4.2
252	17.0	17.5	40	39	1	8.7

Chart uses NDR Multi-Cap Institutional Equity Series data from 10/1/1980 to present. NYSE Composite data used prior.

FIGURE 3.5 S&P 500 INDEX WITH ADVANCE/DECLINE BREADTH THRUST

advancing issues divided by a 10-day sum of declining issues. The NDR Multi-Cap universe covers the top 97 percent of tradable market cap and includes the NDR Large Cap plus the NDR Mid-Cap plus some of the NDR Small Cap (enough to get the market cap to 97 percent).

When the advance/decline ratio exceeds 1.9, we call that a *breadth thrust*. The table in Figure 3.5 shows the history of this indicator back to 1947. Now I know what you're thinking: Hold on—if the Multi-Cap started in 1980, just exactly how did you do this? Especially given that lecture about following only common stocks on the NYSE? Well, we consider ourselves market historians, and we love historical data—as much as we can get. So yes, we borrowed the NYSE advance/decline data going back to 1947 to help illustrate the point that breadth thrusts can be quite significant. It also turns out that, according to our database, stocks other than common stocks made up only 20 percent of listed NYSE issues in 1980.

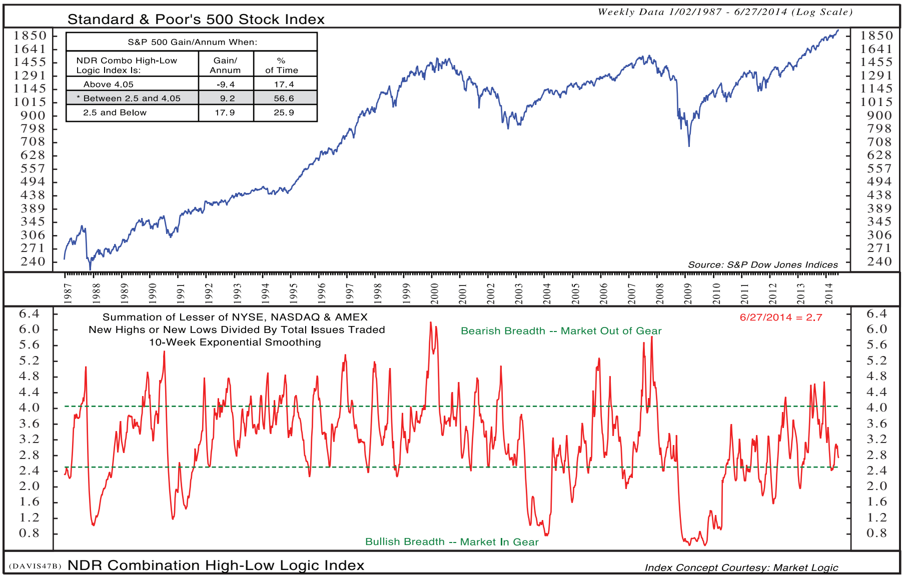
Now how exactly do we get these thrusts to work for us? Typically, we try to determine how long initial momentum is likely to last based on history and then refine our prediction from there. In the case of the indicator shown in Figure 3.5, 80 market days seemed to work well. But what if a signal is repeated in that period? One could approach it in at least two ways: either by simply resetting the count every time a new signal occurs in the 80-day window or by ignoring that signal. After some quick testing we decided on the latter.

The contribution of this indicator to the Fab Five tape component is either +1 or 0. It can never go negative.

If there ever was a cool breadth gauge, the *high-low logic indicator*—developed by Norman Fosback and shown in Figure 3.6—is it. It's basically a measure of how in gear, or bullish, the market is. I'll admit I was quite baffled by this at first. How could a single indicator with opposite messages give the same signal, regardless of the message?

Well, the market is considered in gear when new 52-week highs overwhelm new 52-week lows; it is also in gear when new 52-week lows overwhelm new 52-week highs. The rest of the time, this indicator is either neutral or out-of-gear (bearish).

The high-low logic is calculated by taking the ratio of either new 52-week highs or new 52-week lows, whichever is less, to the total number of issues and then smoothing this ratio with a 10-week exponential moving average.



S&P 500 Gain/Annum When:

NDR Combo High-Low Logic Index Is:	Gain/ Annum	% of Time
Above 4.05	-9.4	17.4
* Between 2.5 and 4.05	9.2	56.6
2.5 and Below	17.9	25.9

FIGURE 3.6 ***TOP*, S&P 500 INDEX; *BOTTOM*, NDR COMBINATION HIGH-LOW LOGIC INDEX**

Fosback's original work used NYSE data back to 1941. Here we use the NYSE in combination with the NASDAQ and the AMEX for a broader look. This also helps us get past our issue with the NYSE listings by adding in higher concentrations of common stocks.

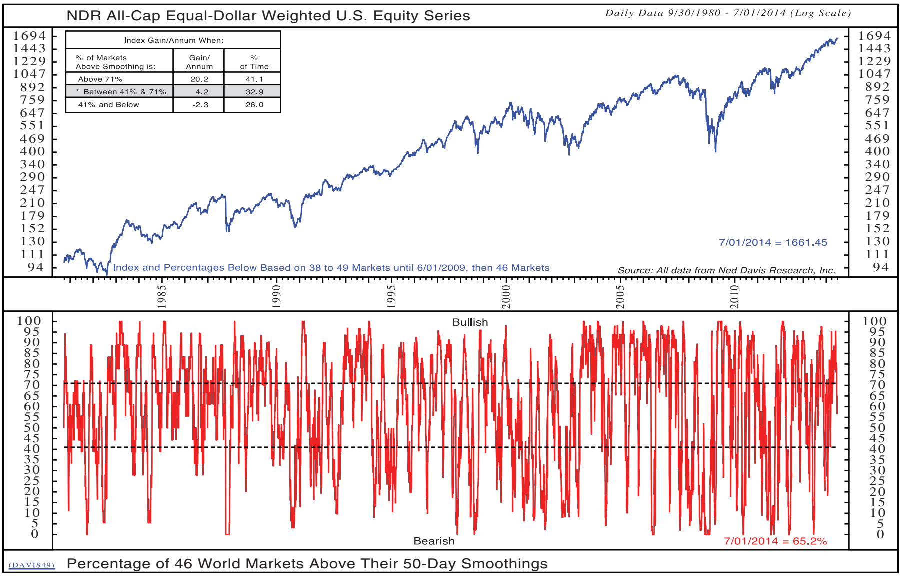
Here's Ned's view of the concept:

> Since market tops are typically slow to form, the increased risk of a peak is evident when the quality market averages are reaching higher levels without confirmation from increasing numbers of 52-week new highs. Whereas a churning, out-of-gear market is most effective as an indicator of tops after rallies, upside confirmation indicates that the market is in gear and that the current uptrend is healthy. Since market bottoms are usually formed relatively quickly, it is also bullish when the market is in gear at selling extremes characterized by new lows on the vast majority of stocks, a sign that a selling climax has left the market oversold.
>
> When many stocks are making new highs at the same time that many are making new lows, the index reading is high, indicating a divergent market. When very few stocks are diverging from the prevailing trend, the index reading is low, a reflection of confirmation.

> In other words, high index readings reflect widespread divergence, which is bearish, whereas low index readings point to one of two bullish conditions: a selling panic with almost no new highs, the sign of an extremely oversold market; or a selling vacuum with almost no new lows, the sign of a market with strong upside momentum. The indicator is able to identify new bull markets with buy signals, while remaining on sell signals during bear market rallies or the blow-off moves that tend to occur near the end of bull markets.

Another of our favorite breadth indicators is the diffusion index. It's more or less a consensus of certain measures for a host of similar vehicles; in this case, world stock markets relative to their 50-day moving averages. Why 50 and not 83 or 27? We like to keep things simple, and virtually everyone is familiar with the 50-day moving average.

Figure 3.7 shows the relationship between global equity markets and the U.S. market. If 71 percent or more of global markets are above their 50-day



Index Gain/Annum When:

% of Markets Above Smoothing is:	Gain/ Annum	% of Time
Above 71%	20.2	41.1
* Between 41% & 71%	4.2	32.9
41% and Below	-2.3	26.0

FIGURE 3.7 ***TOP*, NDR ALL-CAP EQUAL-DOLLAR WEIGHTED U.S. EQUITY SERIES; *BOTTOM*, PERCENTAGE OF 46 WORLD MARKETS ABOVE THEIR 50-DAY SMOOTHINGS**

moving averages, the U.S. market, as represented by the NDR All-Cap Index, appreciates at 20.2 percent per annum. Since 1980, this has occurred 41.1 percent of the time. Conversely, when the percent of markets drops below 41 percent, the NDR All-Cap retreats at 2.3 percent per annum. The contribution to the Fab Five tape component is –1, 0, or +1.

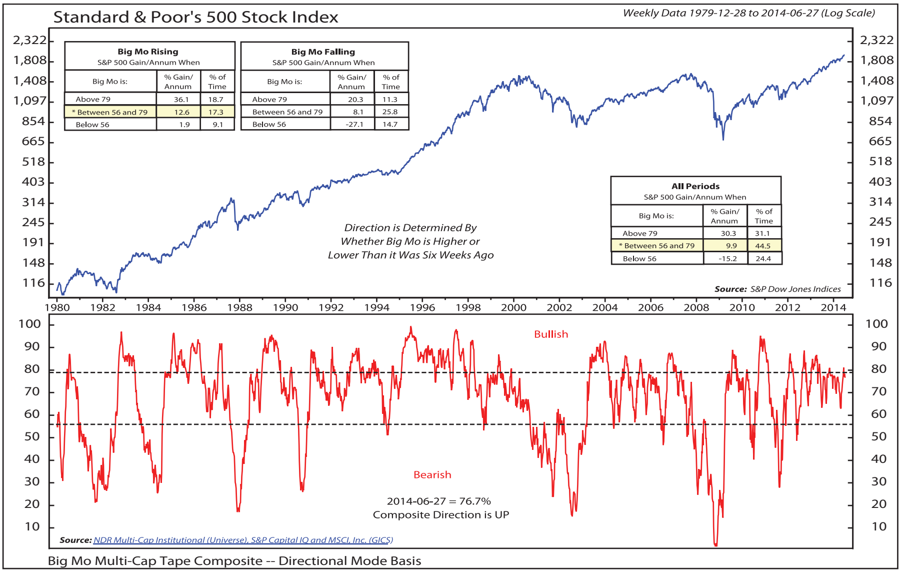
The 46 world markets are MSCI (Morgan Stanley Capital International) All Country World Index members—23 developed economies and 23 emerging ones.

A long-standing tenet of NDR is to *go with Mo*. If the market's momentum is up, we're in; if it's down, we're out. We use this model as a gauge of technical health. Big Mo is a diffusion index that represents the percentage of bullish individual trend and momentum indicators taken from 96 of our own BMES subindustry indices. The trend indicators are based on the direction of a subindustry's moving average, while the momentum indicators are based on the rate of change of the subindustry's price index. The ratio of momentum to trend indicators is around two to one.

In the past we have had several versions of Big Mo. The first one I remember, from 1982, used industry groups that were defined by S&P. (We also had a daily version called Little Mo, built with individual stocks.) After developing our own geometric industry groups in the late 1980s, we rebuilt Big Mo. By the mid-1990s, having added to our stock database, developed our industry work even further, and added new analytical techniques, we took another shot at it. The current version was created in January 2013. As fate would have it, we were forced into a rebuild due to a data vendor technicality; we liked the old model but had no choice but to rebuild.

The indicator shown in Figure 3.8 introduces a modification of our standard mode bat: the directional mode bat. The two mode boxes in the upper left show results based on whether Big Mo is higher or lower than it was six weeks earlier. In the bottom section, the brackets are fixed at 56 and 79, and the results are quite different depending on Big Mo's direction. Whether the model is improving (rising) or weakening (falling) can give valuable information in addition to the model's current level: when Big Mo Tape has been high and rising, the returns have tended to be best, while a low and falling model reading has been associated with the weakest returns.

The weight of this indicator in the tape component of the Fab Five is tricky but sensible. When Big Mo is rising and above 56 we assign a +1;



Big Mo Rising
S&P 500 Gain/Annum When

Big Mo is:	% Gain/ Annum	% of Time
Above 79	36.1	18.7
* Between 56 and 79	12.6	17.3
Below 56	1.9	9.1

Big Mo Falling
S&P 500 Gain/Annum When

Big Mo is:	% Gain/ Annum	% of Time
Above 79	20.3	11.3
Between 56 and 79	8.1	25.8
Below 56	-27.1	14.7

All Periods
S&P 500 Gain/Annum When

Big Mo is:	% Gain/ Annum	% of Time
Above 79	30.3	31.1
* Between 56 and 79	9.9	44.5
Below 56	-15.2	24.4

DAVIS250

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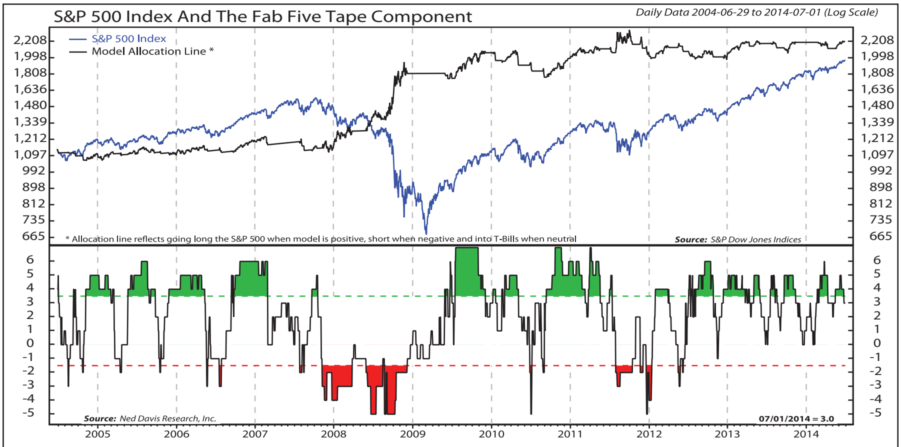
FIGURE 3.8 *TOP*, S&P 500 INDEX; *BOTTOM*, BIG MO MULTI-CAP TAPE COMPOSITE (DIRECTIONAL MODE BASIS)

when it's rising and below 56, it gets a 0; falling and above 79 is another +1; falling and between the brackets is a 0, while falling and below 56 gets the only -1 reading. If Big Mo is unchanged on a six-week basis the reading from the prior week is used.

THE FINAL TAPE COMPONENT

Now that we have all of our indicators, it's a simple matter to add them up to produce a result (see Figure 3.9).

Since there are seven components to the model, the range should be –7 to +7. But remember, the thrust indicator can't go negative, so the overall sum ranges from –6 to +7. The brackets for the model are set at –1.5 and 3.5 (bottom chart section). As with all of the components of the Fab Five, this model is designed to work in four separate time frames. Its contribution to the overall Fab Five is –2, 0, or +2 (remember, it gets double weight).



* Allocation line reflects going long the S&P 500 when model is positive, short when negative and into T-Bills when neutral

Source: *S&P Dow Jones Indices*

Source: *Ned Davis Research, Inc.*

1981-12-31 to 2014-07-01		
Tape Component	**% Gain/ Annum**	**% of Time**
Above 3.5	19.31	36.97
* Between -1.5 and 3.5	9.00	50.16
Below -1.5	-16.37	12.87

2004-06-29 to 2014-07-01		
Tape Component	**% Gain/ Annum**	**% of Time**
Above 3.5	9.72	43.38
* Between -1.5 and 3.5	12.12	42.47
Below -1.5	-21.20	14.15

Years: 1 3 5 10 20 Max

Model	Model Reading	Model	Model Reading
DAVIS250	**BULLISH**	S48	**NEUTRAL**
DAVIS125	**BULLISH**	S245	**NEUTRAL**
DAVIS47B	**NEUTRAL**	DAVIS128A	**BULLISH**
DAVIS49	**NEUTRAL**		

DAVIS501

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FIGURE 3.9 ***TOP*, S&P 500 INDEX; *BOTTOM*, FAB FIVE TAPE COMPONENT**

THE SENTIMENT COMPONENT

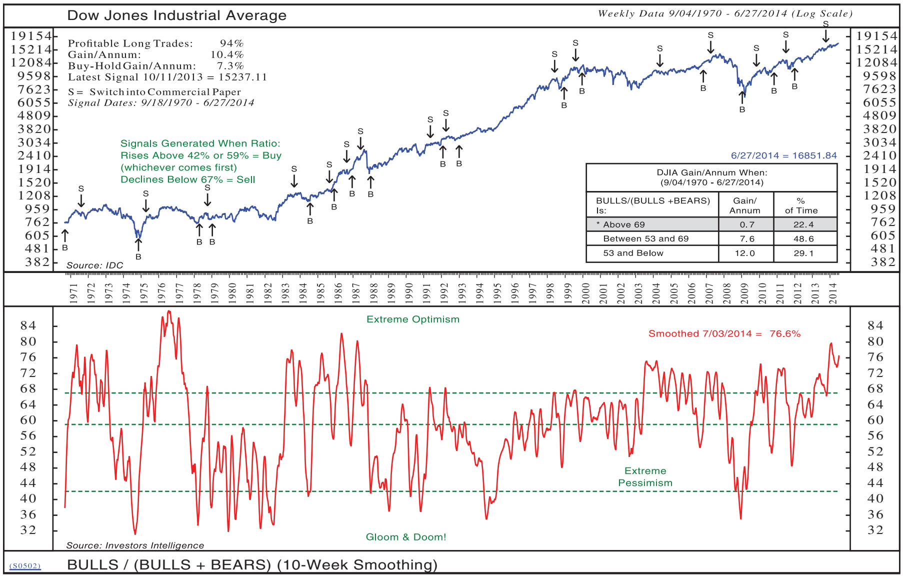
During my initial interview with Ned back in 1984 I was a bit nervous, to say the least. I really had no idea what Ned Davis Research was, and I had never heard of Ned Davis himself. Being new to Florida, I had been scanning the want ads when I came upon a two-line blurb for a statistical researcher. When I phoned the employment agency that had placed the ad, the woman there told me that the client was looking for someone with an MBA who could program in Basic, a once-popular computer language. After I told her I had an MS, had recently worked for a research organization, and could program in Basic, she set up an interview. No information about the company was forthcoming; I went in blind. The address was a house in a semiresidential area. I thought I had the wrong place until I saw a small weather-beaten sign out front that simply said, Ned Davis Research, Investments. I noticed a gleaming maroon Jaguar out back under a carport. My initial interview was in a converted bedroom. When I met Ned, he was wearing shorts, a T-shirt, and boat shoes. I felt a little out of place in my spanking new suit. As I sat there, Ned asked me if I knew the difference between a stock and a bond. My life flashed before my eyes. I had never read a newspaper's business section in my life. I had studied biology, chemistry, and statistics, and generally viewed business majors the way I viewed psychology majors—students from another planet. When I answered with a no, I thought it was curtains for my chances of getting the job, but as it turned out Ned viewed my ignorance as a plus, because it meant I had no preconceived notions about stocks or bonds. I was a bias-free blank slate.

After several months of working for Ned, I began to perceive the relationship between investor psychology and markets. I realized I had gone from analyzing seasonal zooplankton populations to analyzing what basically amounted to fear and greed.

It's hard to find an investor or a trader, or anyone for that matter, who doesn't have an opinion on the direction of the stock market. From blogs to books to PhD dissertations to (above all else) the media, we find no end to sentiment-indicator pay dirt. The terms *irrational exuberance* and *the madness of crowds* reflect the fact that we humans have a flair for exposing our hand. And what better place to show what we're made of than in the stock market?

Fortunately, analysts and market historians have access to a smorgasbord of sentiment indicators. These include polls of investors, newsletter writers, professionals, nonprofessionals, and so on; people who put their money where their mouths are. In addition, there are other ways of determining sentiment. For example, a high price/earnings or price/dividend ratio reflects optimistic investors, while a low P/E or price/dividend ratio shows fearful investors. We can also say the same thing about market momentum in the context of optimism or pessimism. The whole idea is to look for extremes in these indicators. When investors are at their maximum bullish level (when virtually everyone is invested) that indicates a market top. When the vast majority of investors are bearish or have sold whatever they can sell, we generally find market bottoms. The trick, of course, is to detect these extremes.

The sentiment component of the Fab Five uses some of these concepts in its seven indicators. Each indicator delivers +1, 0, or –1 to the overall component, with one exception: our Daily Sentiment Composite (shown later in Figure 3.16), which gets double weight.



DJIA Gain/Annum When:
(9/04/1970 - 6/27/2014)

BULLS/(BULLS +BEARS) Is:	Gain/ Annum	% of Time
* Above 69	0.7	22.4
Between 53 and 69	7.6	48.6
53 and Below	12.0	29.1

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FIGURE 3.10 ***TOP*, DJIA WITH BUY/SELL SIGNALS; *BOTTOM*, BULLS/(BULLS + BEARS) WITH 10-WEEK SMOOTHING**

I wouldn't go so far as to call its name an oxymoron, but Investors Intelligence has been producing the Advisors' Sentiment Report for over 40 years. This survey is one of our favorites. The firm tracks more than 100 independent market newsletters, classifying each as bullish, bearish, or on the fence. In Figure 3.10, we're interested in bullish advisors as a percentage of those with an opinion (bullish + bearish). This presents a longer-term picture of how advisors are feeling, given that it's weekly and the ratio is smoothed over 10 weeks. The presence of too many bulls indicates a market top, while too few bulls points to a market bottom. Again, the trick is discovering how many are too many or too few.

There are three brackets and two analyses on the chart, adding a bit of complexity to this fairly straightforward concept. Let's deal with the signals first. In the bottom section of the chart, excessive optimism is evident when the indicator moves above the upper bracket. Using our reverse-bracket trick, the sell signal comes on the reversal as the indicator drops back below the upper bracket. This provides confirming evidence that a bullish extreme has been reached.

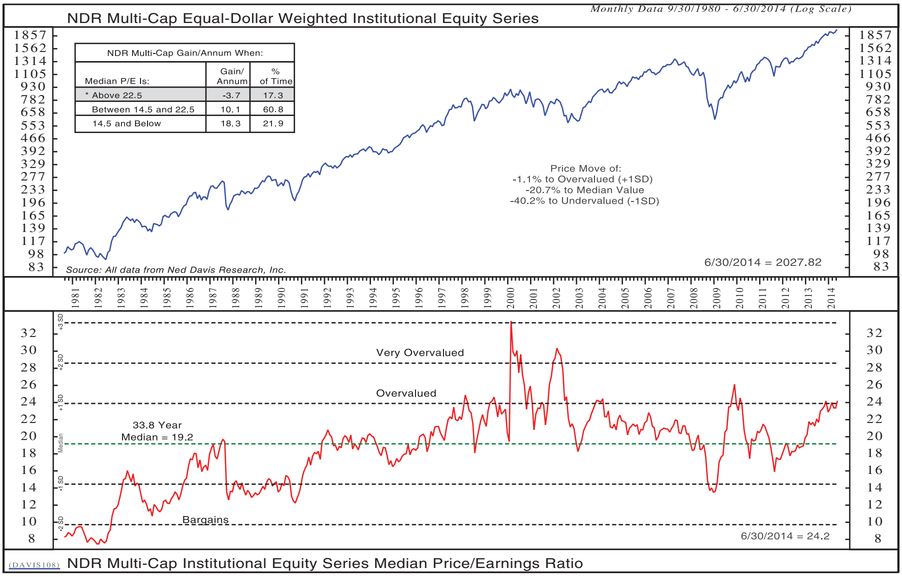
There are two ways to get buy signals, and both use reverse brackets. The most obvious comes when the indicator drops below the very bottom bracket and then reverses back above it. This confirms the bearish extreme. The second way to obtain a buy signal is for the indicator to drop below the middle bracket and reverse back above that bracket (without going below the bottom bracket) while on a sell. Obviously, there is quite a difference in bearish extremes between the middle and bottom brackets, but this only works directly after a period of extreme bullishness.

The second analysis is the mode bat on the bottom right of the top clip. This mode bat shows a straightforward perspective using brackets at 53 and 69. This indicates that the market does well when the reading is below 53 and not so well when it's above 69. It also hints that the indicator is neutral nearly half of the time.

This indicator's contribution to the Fab Five sentiment component is essentially the signals just described but with neutrals thrown in. Having a sentiment indicator that's always on can be a problem, so we employ the reverse-bracket oops trick I mentioned earlier. Doing this has the indicator in a neutral mode roughly 28 percent of the time, keeping it agnostic during repeat extremes.

The P/E ratio indicator shown in the bottom clip of Figure 3.11 is equally comfortable in the valuation or sentiment camp. Even if you know absolutely nothing else about stocks, no one will realize it if you can work P/E into a conversation. The ratio is calculated by dividing the stock price by the latest earnings per share. The P/E shown here is based on the median earnings yield of the stocks in the NDR Multi-Cap Equity Series. (In our calculations, we invert the median yield.) We use the median earnings yield because it's less likely to be influenced by questionable earnings reports.

When Ned explained the concept of P/E to me for the first time, he basically said that it's what investors are willing to pay for one dollar of a company's earnings; in other words, a P/E of 20 indicates that investors are willing to pay 20 times earnings. This chart shows us that over the long term, investors have been willing to pay $19.20 for one dollar in NDR Multi-Cap profits. When the P/E ratio goes beyond a factor of 24 or one



NDR Multi-Cap Equal-Dollar Weighted Institutional Equity Series

Monthly Data 9/30/1980 - 6/30/2014 (Log Scale)

NDR Multi-Cap Gain/Annum When:

Median P/E Is:	Gain/ Annum	% of Time
* Above 22.5	-3.7	17.3
Between 14.5 and 22.5	10.1	60.8
14.5 and Below	18.3	21.9

Price Move of:
-1.1% to Overvalued (+1SD)
-20.7% to Median Value
-40.2% to Undervalued (-1SD)

Source: All data from Ned Davis Research, Inc.

6/30/2014 = 2027.82

(DAVIS108) NDR Multi-Cap Institutional Equity Series Median Price/Earnings Ratio

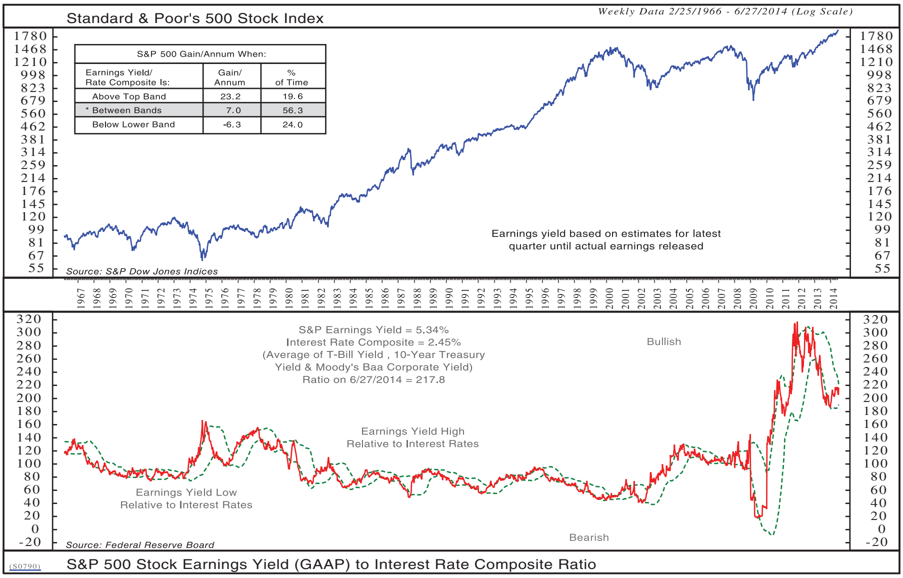
FIGURE 3.11 ***TOP*, NDR MULTI-CAP EQUAL-DOLLAR WEIGHTED INSTITUTIONAL EQUITY SERIES; *BOTTOM*, NDR MULTI-CAP INSTITUTIONAL EQUITY SERIES MEDIAN P/E RATIO**

standard deviation, we're getting into optimism and as it breaches the next bracket up, we're looking at pure euphoria.

The mode bat reveals our actionable levels. The indicator shows excessive optimism or overvaluation at a P/E of 22.5. In that zone, the NDR Multi-Cap Index has fallen at a rate of 3.7 percent per annum. Dropping below 14.5 takes the indicator into too much pessimism or undervaluation. At that position, the Multi-Cap has appreciated at 18.3 percent a year.

This indicator's contribution to the Fab Five sentiment component is +1 below 14.5, 0 from 14.5 to 22.5, and –1 above 22.5. This is one of the few Fab Five indicators that is calculated monthly.

In Figure 3.12 we have a sentiment indicator that could also fit into the valuation category or even the monetary category. This one is a relative measure of earnings to interest rates. While it's true that absolute valuation indicators can be at odds with relative valuation indicators, both can be extremely useful. In this case, very low interest rates can cause this particular indicator to be more bullish than the absolute P/E in Figure 3.11.



S&P 500 Gain/Annum When:

Earnings Yield/ Rate Composite Is:	Gain/ Annum	% of Time
Above Top Band	23.2	19.6
* Between Bands	7.0	56.3
Below Lower Band	-6.3	24.0

Source: S&P Dow Jones Indices

Source: Federal Reserve Board

FIGURE 3.12 ***TOP***, **S&P 500 INDEX;** ***BOTTOM***, **S&P 500 STOCK EARNINGS YIELD (GAAP) COMPARED TO INTEREST RATE COMPOSITE RATIO**

The interest-rate component is a composite calculated as the average yield of 91-day T-bills, 10-year Treasury notes, and Moody's Baa corporates. This gives us a more general view of the interest-rate situation.

To find extremes, we use a 60-week moving standard deviation, with plus or minus 1.3 standard deviations as the brackets. We examine earnings in two ways—relative to interest rates, and relative to time.

The contribution to the Fab Five sentiment component is −1 below the bottom bracket, 0 in between the brackets, and +1 above the upper bracket.

We first started using "moving standard-deviation brackets" in the late 1980s. This developed along with our use of reverse brackets, and indeed, they go well together (although this particular indicator uses regular brackets). An indicator that should be confined to some range but occasionally gets excited is difficult to pin down with absolute brackets. I have seen indicators that spent years in a well-defined range suddenly get trend-happy and then spend years above or below the magic range. Basically, the brackets adjust automatically to changing conditions, creating a new normal as

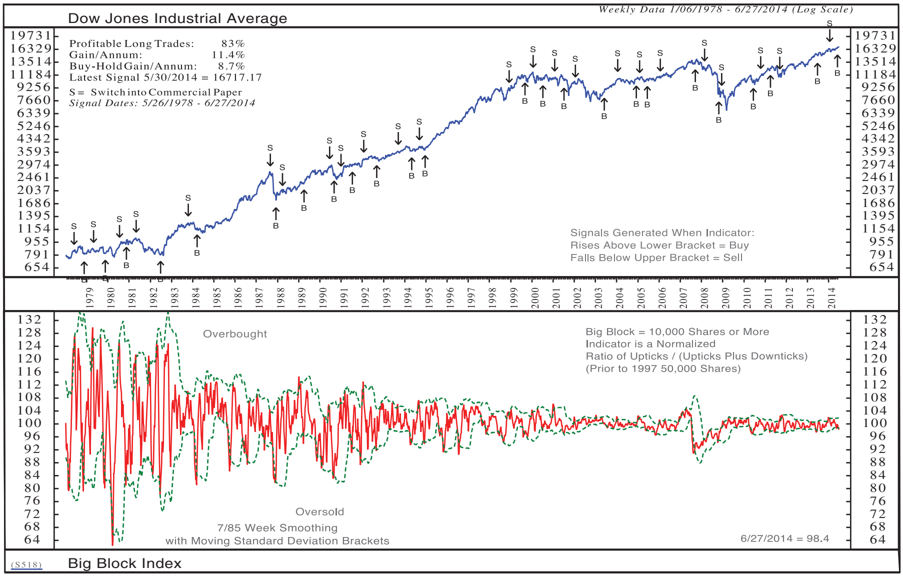


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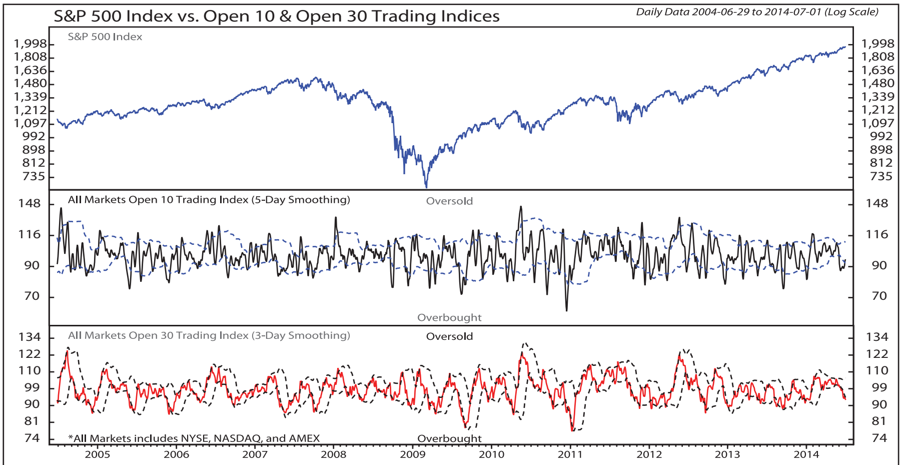
FIGURE 3.13 ***TOP*, DJIA WITH BUY/SELL SIGNALS; *BOTTOM*, BIG BLOCK INDEX**

indicators move strongly up or down. This also helps to correct for volatility. To illustrate this point, Figure 3.13 shows the Big Block Index, whose very nature has shifted dramatically over time due to changes in the size of the blocks, the move to decimals, and other factors. So moving standard-deviation brackets have kept this indicator relevant.

In Figure 3.14 we have an indicator whose basic components are more associated with breadth than sentiment. The TRIN (also known as MKDS or the Trading Index) compares upside volume to downside volume and shows whether trading is concentrated in advancing or declining issues (i.e., it indicates whether the path of least resistance is upward or downward). It is calculated by dividing the ratio of advancing issues to declining issues by the ratio of advancing volume to declining volume.

TRIN's normal 10-day moving average is calculated by adding up individual daily readings and dividing the result by 10. In contrast, the Open 10 Trading Index uses the 10-day totals of each TRIN component (up stocks, down stocks, up volume, and down volume) rather than using individual



11/20/1980 to 07/01/2014		
Open 10	**% Gain/ Annum**	**% of Time**
Above upper band	32.72	11.71
* Between bands	8.58	70.06
Below lower band	-6.48	18.24

11/20/1980 to 07/01/2014		
Open 30	**% Gain/ Annum**	**% of Time**
Above upper band	23.41	11.16
Between bands	8.53	71.05
* Below lower band	-1.71	17.79

11/20/1980 to 07/01/2014		
Signal Sum of Open 10 Plus Open 30	**% Gain/ Annum**	**% of Time**
One or Two	21.63	17.73
Zero	10.19	55.55
* -One or -Two	-3.69	26.72

S280

FIGURE 3.14 S&P 500 INDEX VERSUS OPEN 10 AND OPEN 30 TRADING INDICES

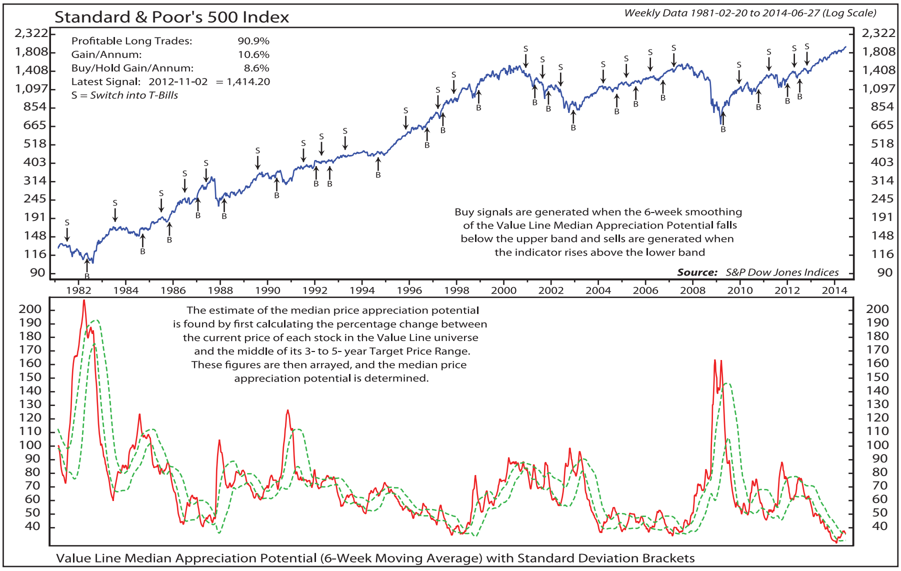
daily computations. Once these component totals are determined for 10 days, they are inserted in the usual TRIN formula: (up stocks/down stocks)/(up volume/down volume). The Open 30 TRIN is derived in the same fashion, but with 30-day totals.

High levels in the Open 10 and Open 30 Trading Indices indicate an oversold market and a cash build-up by the big money. They occur just prior to significant market upswings. The mode boxes show that the market tends to post much better gains when the Open TRINs are high (above the upper dashed lines) and poor results when the Open TRINs are low (below the lower dashed lines). If an investor followed just one of these indicators, he'd be in the market 30 percent of the time. But combining the two would increase that to about 45 percent.

Contribution to the sentiment component is –1 when both TRINs are negative or one is negative and the other is neutral, 0 when they sum to 0, and +1 when both are positive or one is positive while the other is neutral.

Back in the 1980s, Ned conducted weekly research meetings. He was a huge Value Line fan; he loved that firm's approach to research and loved its indicators. One day he told us a story about Arnold Bernhard, the founder of Value Line, who had built a hugely successful investment research firm that ultimately stood on its own two feet, independent of him. When Arnold Bernhard died in 1987 his death was widely reported but had no effect on the company; it was business as usual, and Value Line is still very strong and well-respected. Ned's point was that he hoped Ned Davis Research, the firm he founded, would someday have the same foundation. (Granted, Arnold Bernhard's firm was called Value Line and not Arnold Bernhard Research, but. . . .)

The indicator shown in the bottom clip of Figure 3.15 is one of Value Line's key fundamental indicators and is based on its analysts' three- to five-year P/E projections for the stocks in their universe. The estimate of the median price appreciation potential is found by multiplying each stock's current earnings by its future P/E projection as determined by Value Line analysts. Each stock gets a value and the median of these values is the


Standard & Poor's 500 Index

Weekly Data 1981-02-20 to 2014-06-27 (Log Scale)

Profitable Long Trades: 90.9%
Gain/Annum: 10.6%
Buy/Hold Gain/Annum: 8.6%
Latest Signal: 2012-11-02 = 1,414.20
S = *Switch into T-Bills*

Buy signals are generated when the 6-week smoothing of the Value Line Median Appreciation Potential falls below the upper band and sells are generated when the indicator rises above the lower band

Source: *S&P Dow Jones Indices*

The estimate of the median price appreciation potential is found by first calculating the percentage change between the current price of each stock in the Value Line universe and the middle of its 3- to 5- year Target Price Range. These figures are then arrayed, and the median price appreciation potential is determined.

Value Line Median Appreciation Potential (6-Week Moving Average) with Standard Deviation Brackets

DAVIS52B

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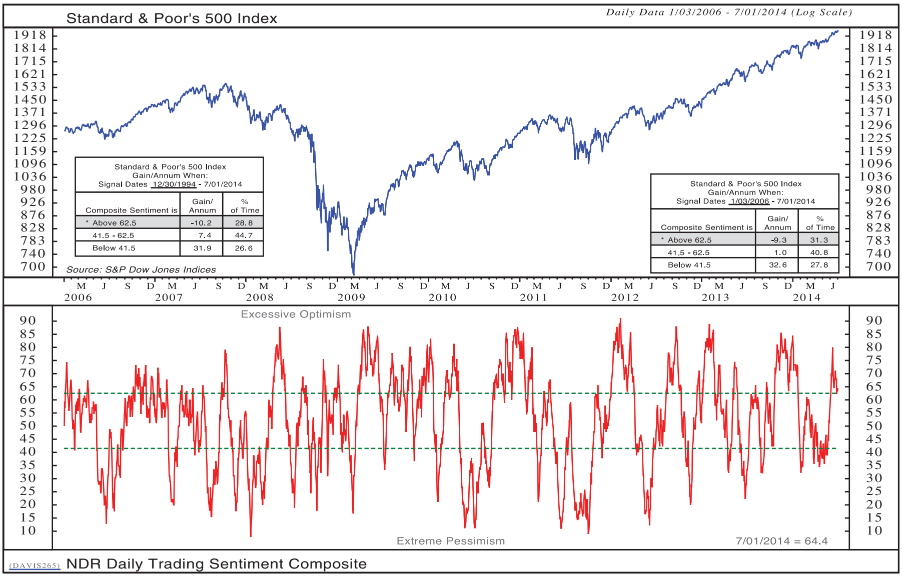
FIGURE 3.15 ***TOP***, **S&P 500 INDEX WITH BUY/SELL INDICATORS; *BOTTOM*, VALUE LINE MEDIAN APPRECIATION POTENTIAL (VLMAP) WITH SD BRACKETS (SIX-WEEK MOVING AVERAGE)**

VLMAP. As Value Line points out, though, the VLMAP tends to be a bit high (earnings estimates tend to be a little optimistic, to say the least).

We have applied the NDR moving standard-deviation reverse bracket solution to this indicator. The standard deviation is nine months and the brackets are asymmetric at –1.0 and +0.6. Although it can't be seen on the chart, we allow the signal to go neutral in typical oops fashion. The contribution to the Fab Five sentiment component is +1 when the six-week smoothing of the VLMAP drops below the upper bracket and –1 when it moves from below to above the lower bracket. That sell signal at the end of 2012 looked bad, but in Fab Five reality, it was negative for only seven weeks before it hit oops, or neutral, mode.

Although the Daily Trading Sentiment Composite shown in Figure 3.16 is just an indicator to the Fab Five, in reality this is a model composed of 27 individual indicators from six areas:

1. Advisory Service Sentiment (44.4 percent) is based on results from various polls, including those from the National Association of



Standard & Poor's 500 Index
Gain/Annum When:
Signal Dates 12/30/1994 - 7/01/2014

Composite Sentiment is	Gain/ Annum	% of Time
* Above 62.5	-10.2	28.8
41.5 - 62.5	7.4	44.7
Below 41.5	31.9	26.6

Standard & Poor's 500 Index
Gain/Annum When:
Signal Dates 1/03/2006 - 7/01/2014

Composite Sentiment is	Gain/ Annum	% of Time
* Above 62.5	-9.3	31.3
41.5 - 62.5	1.0	40.8
Below 41.5	32.6	27.8

Source: S&P Dow Jones Indices

FIGURE 3.16 ***TOP*, S&P 500 INDEX; *BOTTOM*, NDR DAILY SENTIMENT COMPOSITE**

Active Investment Managers, Investors Intelligence, the American Association of Individual Investors, Mark Hulbert, and others.

2. Asset flows (13.3 percent) looks at the commitment of traders reports and mutual-fund flows.
3. Overbought/oversold (13.3 percent) includes various volume-related indicators as well as A/D indicators.
4. Valuation/sentiment (8.9 percent) looks at earnings relative to interest rates.
5. Volatility (8.9 percent) is based on the VIX (the Chicago Board Options Exchange's volatility index, which analysts use to help gauge how worried or confident investors are) and SKEW (an index that essentially tries to show the probability of an extreme market event, such as a crash).
6. Put/call options ratios (11.1 percent) include various ISE (International Securities Exchange) and CBOE ratios.

Each of the 27 indicators uses moving standard deviation brackets (not reverse brackets). During testing, each indicator had to work in all four predetermined time frames before being selected for inclusion. For an indicator to make the final model there had to be plenty of good results to pick from. This is true for any indicator in any Ned Davis Research model—if you have a feeling that an indicator has a strong relationship to the market and you're using the appropriate techniques, then you should get piles of output that reflect your perception of the indicator. If an analysis turns up only a small percentage of decent results then either (1) the indicator isn't any good, or (2) the analytical technique needs refinement. If there are only a handful of acceptable results after exhausting all possibilities for analysis, chalk those results up to luck, toss the indicator, and move on. In the case of the Daily Trading Sentiment Composite, virtually all of the indicators had plenty of acceptable results.

The composite itself is basically an inverted diffusion index: inverted so that high numbers are excessively optimistic and therefore bearish, and low numbers are pessimistic and therefore bullish.

The three charts that follow illustrate several components. The first is the Hulbert Newsletter Stock Sentiment Index (Figure 3.17). Mark Hulbert measures average equity exposure among a subset of advisors who focus on timing the overall stock market's short-term gyrations. This is a

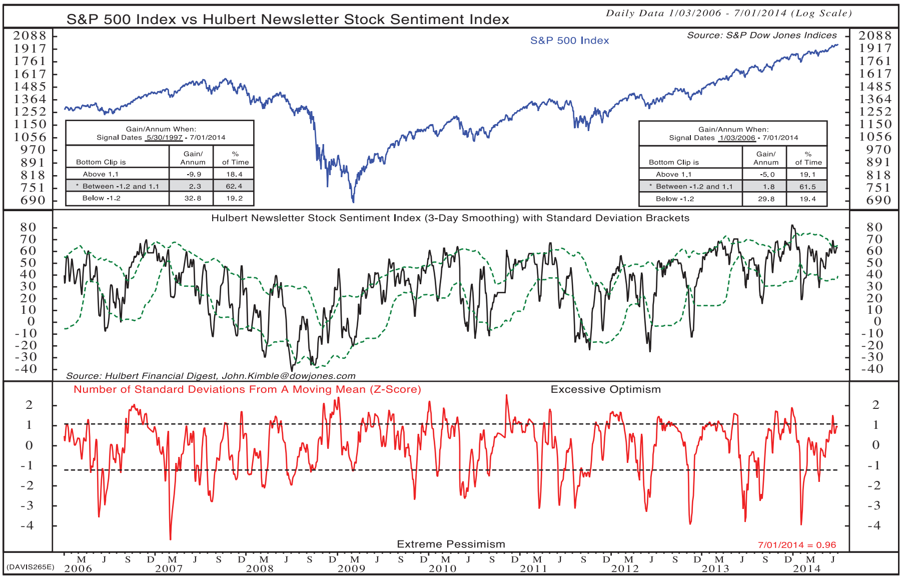


FIGURE 3.17 S&P 500 INDEX VERSUS THE HULBERT NEWSLETTER STOCK SENTIMENT INDEX

typical Daily Trading Sentiment Composite indicator, showing the moving standard deviation brackets in the middle clip with the bottom clip reflecting the same thing but in a form called a z-score. Doing this allows us to compare one z-score with another without the fog of periods and brackets. When most of the advisors move to the bullish side that's negative for the market, and vice versa.

The classic overbought-oversold indicator shown in Figure 3.18 is based on extreme volume movements. We have taken the NDR Multi-Cap universe and presented advancing volume as a percentage of advancing and declining volume combined. When advancing volume reaches an extreme by violating the upper bracket of the standard-deviation window it's typically negative for the market. This is another one of Ned's favorite get-ready-to indicators.

Volatility is sentiment in motion; Figure 3.19 shows the VIX to be bearish during low volatility periods and bullish during high volatility periods. The reversals are when most of the gains are made.

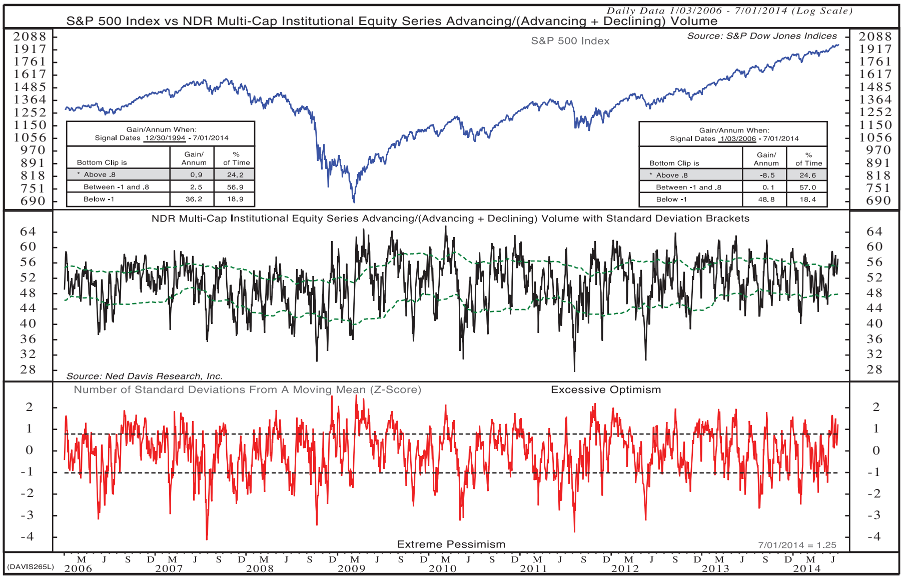


FIGURE 3.18 S&P 500 INDEX VERSUS MULTI-CAP INSTITUTIONAL EQUITY SERIES ADVANCING/(ADVANCING + DECLINING) VOLUME

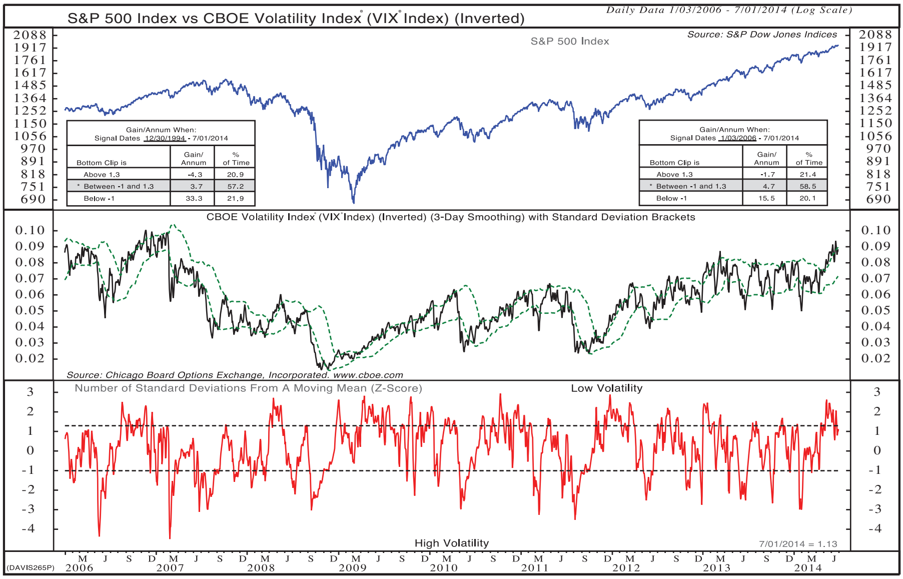


FIGURE 3.19 S&P 500 INDEX VERSUS CBOE VIX (INVERTED)

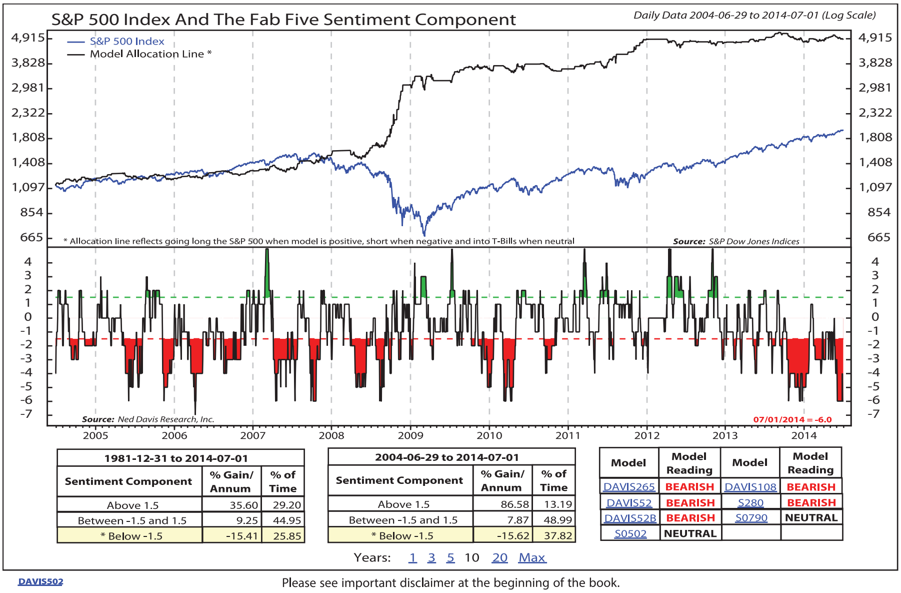
The contribution to the Fab Five sentiment component is +2 when the daily sentiment composite is below the lower bracket, 0 in between the brackets, and –2 when above the upper bracket.

SENTIMENT SUMMARY

The final sentiment component, shown in Figure 3.20, is a sum of the indicators discussed (plus one more P/E indicator) for a range of -8 to +8 (remember, the daily sentiment composite has double weight). The brackets are set at –1.5 and 1.5.

THE MONETARY COMPONENT

Our third major piece is the Fab Five monetary component. The adage “money moves markets” is probably as old as the markets themselves; without demand in some form of purchasing power, there would be no markets. The availability of money equates to liquidity, and measures of liquidity help us get a handle on risk. Of course, the source and quality of money



* Allocation line reflects going long the S&P 500 when model is positive, short when negative and into T-Bills when neutral

Source: S&P Dow Jones Indices

Source: Ned Davis Research, Inc.

1981-12-31 to 2014-07-01		
Sentiment Component	% Gain/ Annum	% of Time
Above 1.5	35.60	29.20
Between -1.5 and 1.5	9.25	44.95
* Below -1.5	-15.41	25.85

2004-06-29 to 2014-07-01		
Sentiment Component	% Gain/ Annum	% of Time
Above 1.5	86.58	13.19
Between -1.5 and 1.5	7.87	48.99
* Below -1.5	-15.62	37.82

Model	Model Reading	Model	Model Reading
DAVIS265	BEARISH	DAVIS108	BEARISH
DAVIS52	BEARISH	S280	BEARISH
DAVIS52B	BEARISH	S0790	NEUTRAL
S0502	NEUTRAL		

Years: 1 3 5 10 20 Max

DAVIS502

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FIGURE 3.20 *TOP*, S&P 500 INDEX AND MODEL ALLOCATION LINE; *BOTTOM*, FAB FIVE SENTIMENT COMPONENT

also matter, and our view of the monetary situation comes from two major sources: (1) the price of money, meaning interest rates; and (2) the supply of money.

Rates of change in interest rates—regardless of what maturities we're looking at or whether we're examining government or corporate securities—yield consistently good results against the stock market. My first real look at this was in 1987, when Ned came up with the idea of bulls/(bulls + bears) in the context of the monetary environment. He thought that when a bull market was under way it would take a much higher percentage of bulls to send a bearish signal than it would in a bear market. He hypothesized the same should be true for buying the market under favorable conditions: the percentage of bulls shouldn't have to drop as far as it would have to under bear market conditions. To test this, we used a 26-week rate of change in intermediate government bond prices as a proxy for bull and bear markets. Bond momentum above a certain level would indicate a bull market, while momentum below a lower level would indicate a bear market. I can remember Ned standing behind me, tossing out ideas while I sat at my desk doing my best to program them into a computer. Sure enough, the concept worked, and thus Ned's dynamic brackets were hatched. This led to our embracing moving standard deviation brackets the following year.

The indicator shown in Figure 3.21 presents Moody's corporate Baa yields as a 26-week percent change. It's just that simple: when interest rates are heating up, it's bad for stocks. When interest rates are coming down, it's good for stocks. The brackets are set for the NDR Multi-Cap Geometric Total Return Index, but they work just as well for the S&P 500. The contribution to the monetary component is +1 below –3 percent, 0 between –3 and 6 percent, and –1 above 6 percent.

Figure 3.22, which shows the annual rate of growth of industrial production and the commodity price component of the producer price index (PPI) subtracted from the 12-month change of the M2 money supply, illustrates the relationship between monetary and economic environments, with industrial production and PPI commodities representing the economy and what is produced with available money.

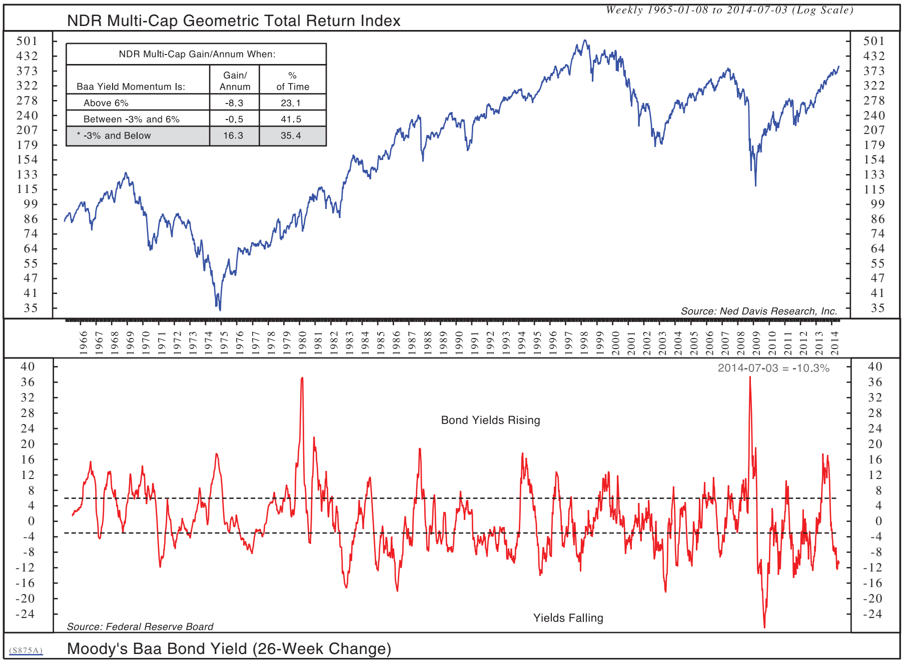
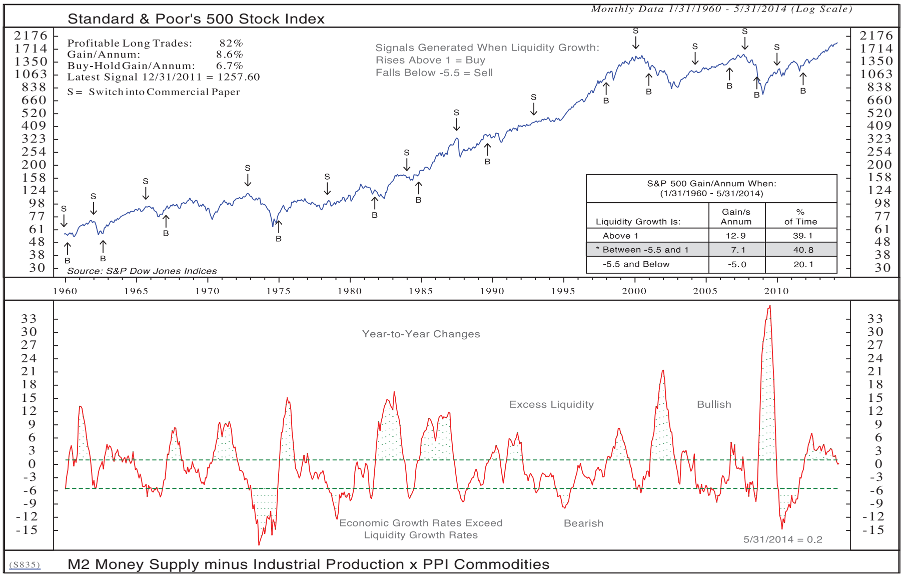


FIGURE 3.21 ***TOP*, NDR MULTI-CAP GEOMETRIC TOTAL RETURN INDEX; *BOTTOM*, MOODY'S BAA BOND YIELD (26-WEEK CHANGE)**

Liquidity is represented by the current-dollar M2 money supply, a measure of the money available for spending. When M2's rate of growth exceeds that of industrial production and PPI commodities, there is excess liquidity in the system, some of which flows into stocks. The periods of excess liquidity shown on this chart correspond well with stock-market uptrends.

When economic growth far exceeds the growth rate of liquidity, a rapidly expanding economy is siphoning liquidity away from financial assets and placing downward pressure on the stock market. Nearly all past bear markets have occurred when economic growth outstripped liquidity growth.

The mode box in the top clip of Figure 3.22 shows us that bullish conditions are best indicated when this indicator rises above the top bracket, while bearish conditions occur when the indicator falls below the lower bracket.



S&P 500 Gain/Annum When:
(1/31/1960 - 5/31/2014)

Liquidity Growth Is:	Gain/s Annum	% of Time
Above 1	12.9	39.1
* Between -5.5 and 1	7.1	40.8
-5.5 and Below	-5.0	20.1

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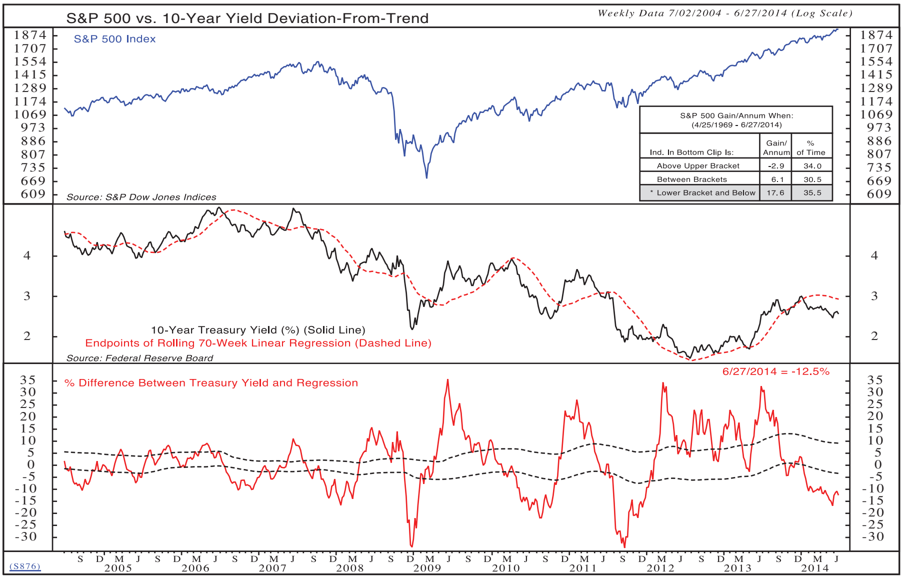
FIGURE 3.22 ***TOP***, **S&P 500 INDEX WITH LIQUIDITY SIGNALS;** ***BOTTOM***, **M2 MONEY SUPPLY—(INDUSTRIAL PRODUCTION X PPI COMMODITIES)**

The contribution to the Fab Five monetary component is –1 below the lower bracket, 0 between the two brackets, and +1 above the upper bracket.

Figure 3.23 uses a variation on a deviation-from-trend calculation to create an interest-rate indicator for the stock market using the benchmark 10-year Treasury note's yield. Instead of being represented by a longer term moving average, the trend is defined by a 70-week moving simple linear regression of the yield against time. The regression line represents the interest rate trend and the difference between the prediction and the actual result represents the deviation (see bottom clip).

To determine whether a given differential should be considered high or low, we plot moving standard deviation brackets around a three-year (156-week) moving average of the differential (+/– 0.4 standard deviation above and below). By doing this, roughly a third of the time historically is spent above the upper bracket (indicating rising interest rates), a third of the time is spent below the lower bracket (falling interest rates), and a third



S&P 500 Gain/Annum When: (4/25/1969 - 6/27/2014)		
Ind. In Bottom Clip Is:	Gain/ Annum	% of Time
Above Upper Bracket	-2.9	34.0
Between Brackets	6.1	30.5
* Lower Bracket and Below	17.6	35.5

FIGURE 3.23 **S&P 500 INDEX VERSUS 10-YEAR YIELD DEVIATION-FROM-TREND**

of the time is spent between the brackets (neutral rates). The three-year time frame gives us a longer term perspective in the level and volatility of the indicator. The mode box in the top clip summarizes the results from 1969–2014. It shows that the S&P 500 has had subpar returns, on average, when the differential has been above the upper bracket, while it has posted strong annualized gains when the differential has been below the lower bracket. Neutral readings have been associated with average returns. Only the latest 10 years of data are plotted for better visibility.

The concept behind the chart is that the rolling regression trend line could reflect a simplistic estimate of where investors might think interest rates should be, and incorporates their tendency to extrapolate an uptrend or downtrend in rates into the future, which a simple moving average doesn't do. This indicator thus gives a different perspective on where current bond yields are relative to their recent trend. This is a useful timing indicator for the stock market.

The contribution to the Fab Five monetary component is −1 above the upper bracket, 0 in between the brackets, and +1 below the lower bracket.

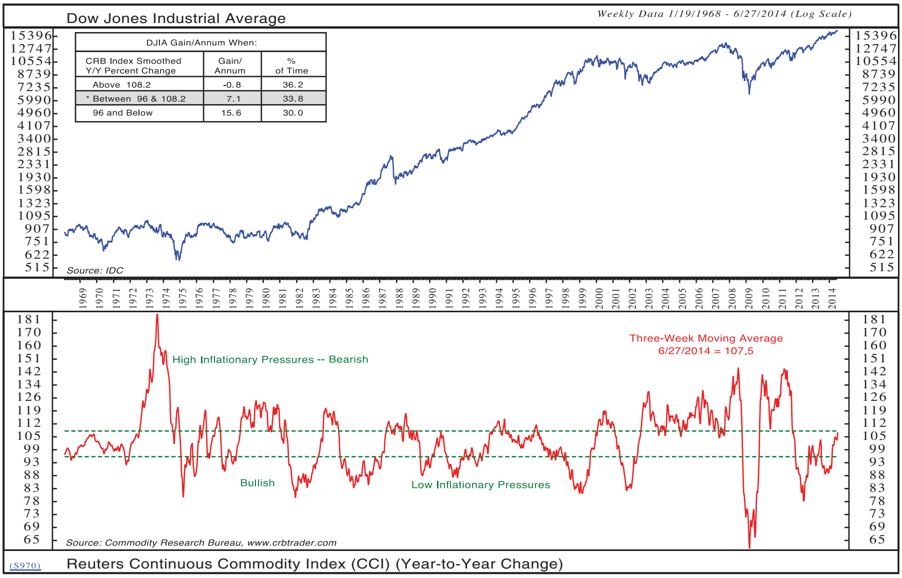


FIGURE 3.24 ***TOP*, DJIA; *BOTTOM*, REUTERS CCI (YEAR-TO-YEAR CHANGE)**

Early in my tenure at NDR, Ned mentioned the classic definition of inflation: too much money chasing too few goods. With the possible exception of interest rates, inflation is his favorite macro indicator; its effect on stocks has been featured in his *Hotline* many times. In the indicator shown in Figure 3.24 we use the rate of change of the Reuters Continuous Commodity Index (CCI) as a proxy for inflation. Since this is a weekly chart, updates are more timely than official consumer price data, so in a sense this gives us an early heads-up on inflation trends.

Rising commodity prices indicate inflationary pressures. When the year-to-year change in the three-week moving average of the Reuters CCI is above 8.2 percent, it has a negative effect on the stock market. When the year-to-year change drops by 4 percent or more, the market surges ahead.

The contribution to our Fab Five monetary component is +1 below 96, 0 between 96 and 108.2, and –1 above 108.2.

In Figure 3.25 we have the AMEX Securities Broker/Dealer Index, which tracks interest rate–sensitive financial stocks. The operative phrase is "interest

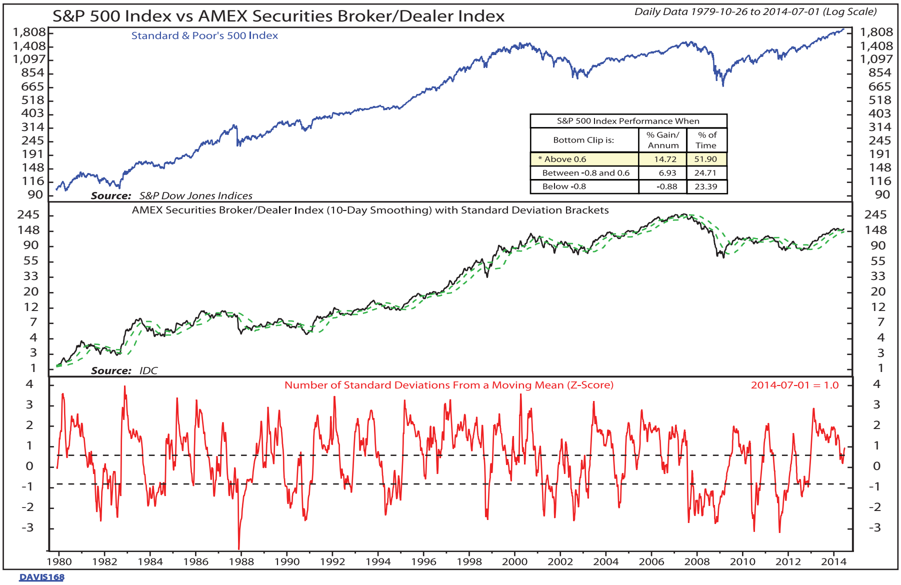


FIGURE 3.25 **S&P 500 INDEX VERSUS AMEX SECURITIES BROKER/DEALER INDEX**

rate–sensitive." These stocks do well when interest rates are falling and poorly when they're rising. They also tend to lead markets. If there are systemic risks, Financials generally will ferret them out. This is why Financials nearly always turn down on a relative basis before the overall stock market goes into a bear market. By smoothing the index over 10 days and employing moving standard deviation brackets, we can get a preview of where the market thinks interest-rate risk is headed. The standard deviation is done over 200 days, and brackets are just under plus or minus one standard deviation.

During and just after the Great Recession, we were looking for new monetary indicators that had weathered the storm. Ned thought this might work, and indeed it did and continues to do so.

The contribution to the monetary component is +1 when the smoothed price is above the upper standard deviation, 0 between the upper and lower deviations, and −1 when below the lower deviation.

As we know, liquidity or lack of liquidity helps to move markets. One way to tell whether the Fed's monetary policy is easy or tight is to follow the trend of free reserves (called *net borrowed reserves* when negative).

Most banks must keep a certain percentage of their deposits with the Federal Reserve. Since the banks can use excess reserves (total reserves less required reserves) to make investments, a free reserve position (excess reserves less borrowed reserves) usually indicates easy money. On the other hand, when money is tight banks often must borrow to meet the Fed's reserve requirements.

For the indicator shown in Figure 3.26, we take Federal Reserve Board data and normalize it by calculating the spread between the three-week moving average and the 52-week moving average. This shows us any deviations from the longer term trend. When the three-week rises faster than the 52-week, the chart indicates that Fed ease is accelerating. When the opposite occurs, this suggests that the Fed is becoming increasingly restrictive.

While the trend of free reserves is important, so is the level. As a rule, the market is in good shape when the normalized level of free reserves exceeds $200 million ($0.2 billion on the chart). When the normalized level of free reserves drops below –$180 million (–$0.18 billion on the chart), it indicates that the market is in trouble. As occurred in 1984, however, extremely low liquidity levels suggest that Fed easing is likely, a positive for stocks.

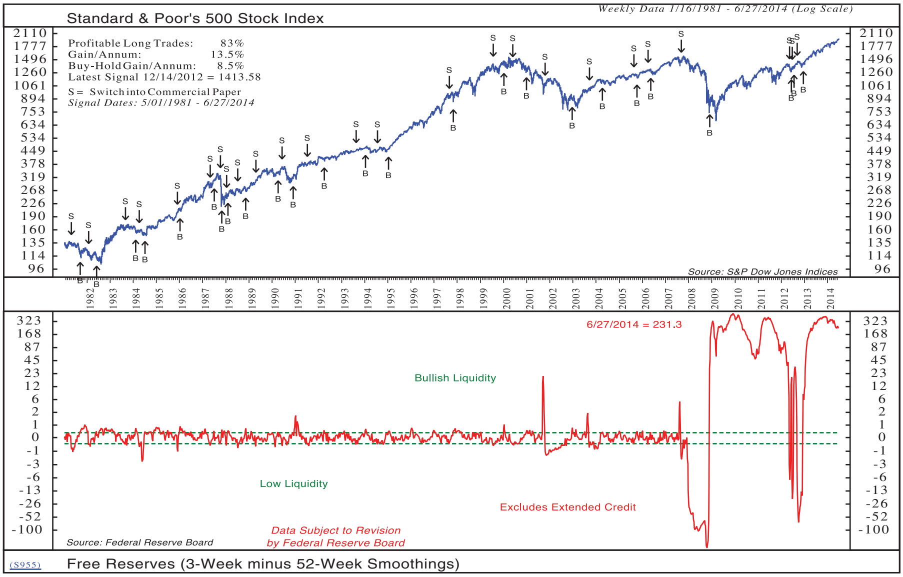


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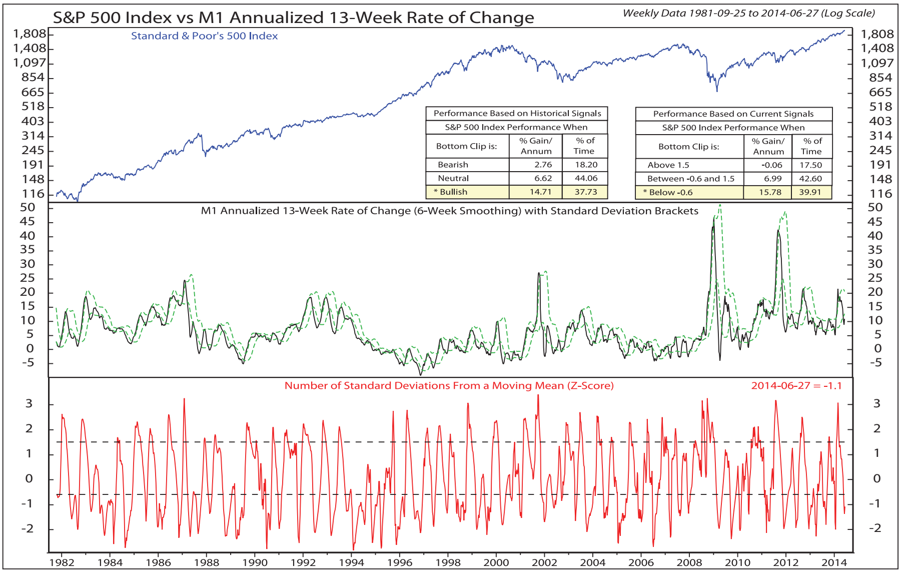
FIGURE 3.26 ***TOP***, **S&P 500 INDEX WITH BUY/SELL SIGNALS;** ***BOTTOM***, **FREE RESERVES (3-WEEK MINUS 52-WEEK SMOOTHINGS)**

The Federal Reserve Board's actions can be inferred from the trend and level of free reserves. When free reserves are negative and falling, the Fed is putting the brakes on monetary policy. When they are positive and rising, the central bank is stepping on the accelerator.

The break we see in 2009 reflects the massive liquidity programs designed to ease strains in the banking system during the financial crisis and changes in reserve requirements. It also suggests that the Fed's policy of paying 0.25 percent interest on reserves had a longer term effect on this indicator. There is an obvious new normal here that begs the question: Is it time to reanalyze this indicator using our moving standard deviation tool? At some point, we will revisit this indicator.

The contribution to the Fab Five monetary component is +1 above the upper bracket, 0 between the two brackets, and –1 below the bottom bracket.

Figure 3.27 shows that growth in M1 can be so good, it's bad. But it also can be so bad, it's good. This is a reflection of the Fed's influence on the monetary base. Theoretically, an increasing monetary base and money supply should help depress the cost of money—interest rates. When the growth rate reaches an extreme, however, a change in Fed policy is likely. Extremely high



Performance Based on Historical Signals		
S&P 500 Index Performance When		
Bottom Clip is:	% Gain/ Annum	% of Time
Bearish	2.76	18.20
Neutral	6.62	44.06
* Bullish	14.71	37.73

Performance Based on Current Signals		
S&P 500 Index Performance When		
Bottom Clip is:	% Gain/ Annum	% of Time
Above 1.5	-0.06	17.50
Between -0.6 and 1.5	6.99	42.60
* Below -0.6	15.78	39.91

DAVIS176

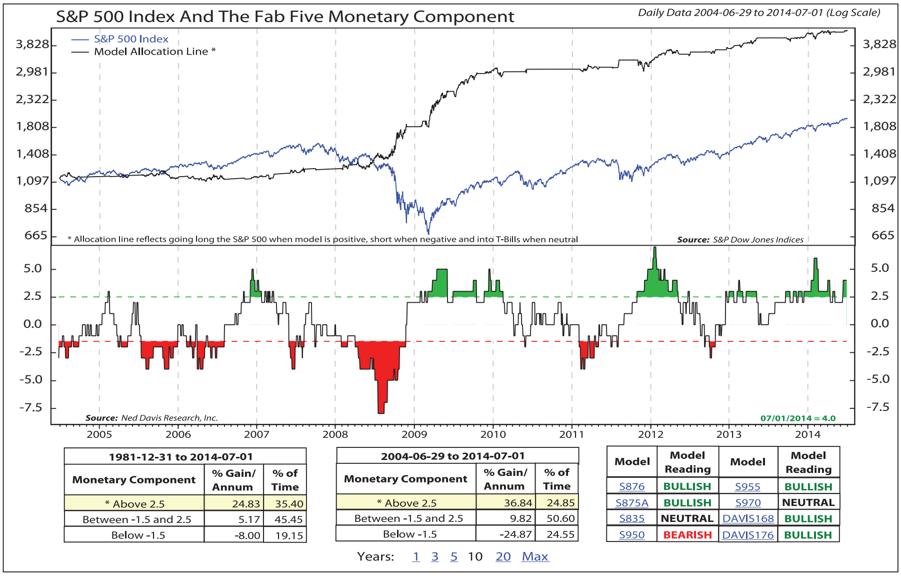
FIGURE 3.27 S&P 500 INDEX VERSUS M1 ANNUALIZED 13-WEEK RATE OF CHANGE

money supply growth rates tend to be bearish for stocks, since they indicate that the Fed may tighten its monetary policy (due to inflationary pressures) and send interest rates upward. Conversely, extremely low money supply growth rates are actually bullish for stocks, since they indicate that the Fed may ease its monetary policy and allow interest rates to fall.

Extremes are determined by moving standard deviation brackets with the monetary component getting +1 below the bottom bracket, 0 in between the brackets, and –1 above the upper bracket.

MONETARY COMPONENT SUMMARY

The final monetary component in Figure 3.28 is a sum of the indicators discussed in the preceding section (plus an additional interest rate indicator, not discussed) for a range of –8 to +8. The brackets are set at –1.5 and 2.5. Because the brackets are asymmetric, it's easier to get a sell than it is to get a buy. As with all of our other Fab Five components, this model was constructed to work in all four of our preset time frames.



* Allocation line reflects going long the S&P 500 when model is positive, short when negative and into T-Bills when neutral

Source: *S&P Dow Jones Indices*

Source: *Ned Davis Research, Inc.*

1981-12-31 to 2014-07-01		
Monetary Component	**% Gain/ Annum**	**% of Time**
* Above 2.5	24.83	35.40
Between -1.5 and 2.5	5.17	45.45
Below -1.5	-8.00	19.15

2004-06-29 to 2014-07-01		
Monetary Component	**% Gain/ Annum**	**% of Time**
* Above 2.5	36.84	24.85
Between -1.5 and 2.5	9.82	50.60
Below -1.5	-24.87	24.55

Model	Model Reading	Model	Model Reading
S876	BULLISH	S955	BULLISH
S875A	BULLISH	S970	NEUTRAL
S835	NEUTRAL	DAVIS168	BULLISH
S950	BEARISH	DAVIS176	BULLISH

Years: 1 3 5 10 20 Max

DAVIS503

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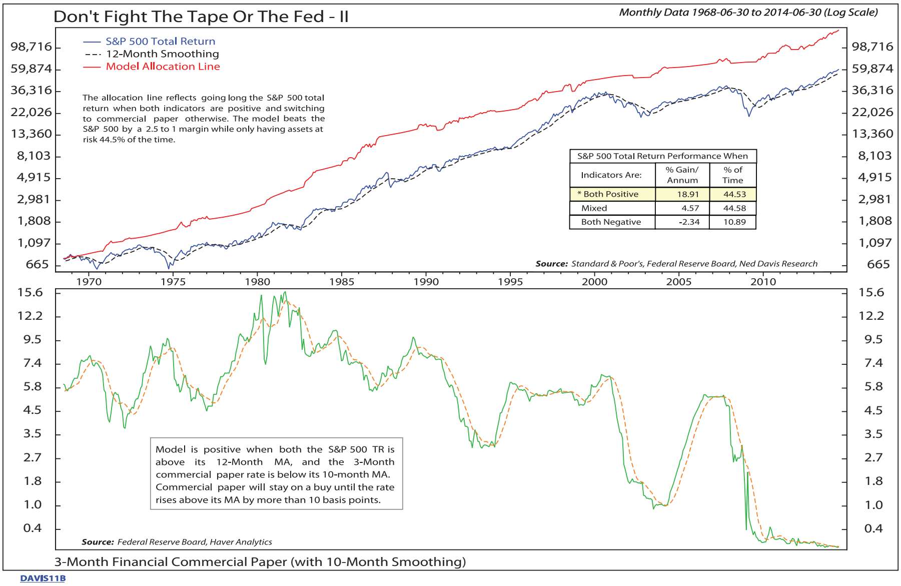
FIGURE 3.28 *TOP*, S&P 500 INDEX AND MODEL ALLOCATION LINE; *BOTTOM*, FAB FIVE MONETARY COMPONENT

FAB FIVE COMBO COMPONENT

We now come to the Fab Five's final component. We call it Combo because it's composed of six stock-market models, each with a different mix of indicators. The six range from the very simple to the very complex, but they each have the same weight. In choosing them, we simply grabbed models that Ned is comfortable with and watches every day (he watches a lot each day, and I still don't know how he does it). We've found that it helps to have a variety of models, each with its own indicator mix. Aggregating these models produces a consensus to help clarify risk and reward. Adding to our comfort level is that some of our best researchers have worked on these models over the years. And we've had some very smart, very creative analysts at what we sometimes call NDR University.

The model shown in Figure 3.29 is far and away the simplest; we call it Don't Fight the Tape or the Fed II, which says it all. It has only a tape indicator and a monetary indicator. Adding to its simplicity is that it's monthly



Don't Fight The Tape Or The Fed - II

Monthly Data 1968-06-30 to 2014-06-30 (Log Scale)

The allocation line reflects going long the S&P 500 total return when both indicators are positive and switching to commercial paper otherwise. The model beats the S&P 500 by a 2.5 to 1 margin while only having assets at risk 44.5% of the time.

S&P 500 Total Return Performance When		
Indicators Are:	% Gain/ Annum	% of Time
* Both Positive	18.91	44.53
Mixed	4.57	44.58
Both Negative	-2.34	10.89

Source: *Standard & Poor's, Federal Reserve Board, Ned Davis Research*

Model is positive when both the S&P 500 TR is above its 12-Month MA, and the 3-Month commercial paper rate is below its 10-month MA. Commercial paper will stay on a buy until the rate rises above its MA by more than 10 basis points.

Source: *Federal Reserve Board, Haver Analytics*

3-Month Financial Commercial Paper (with 10-Month Smoothing)

DAVIS11B

FIGURE 3.29 ***TOP*, S&P 500 TOTAL RETURN WITH MODEL ALLOCATION LINE; *BOTTOM*, THREE-MONTH FINANCIAL COMMERCIAL PAPER (WITH 10-MONTH SMOOTHING)**

(and thus a longer term indicator). The tape indicator is a 12-month moving average cross of the S&P 500 Total Return Index. It's positive when the total return is above the moving average, and negative when it's below. The second indicator is also a moving-average cross. It's positive when the 90-day commercial paper rate drops below its 10-month moving average, and negative when the yield moves above its average by 10 basis points (each equal to 1/100th of a percentage point). When both indicators are positive (as they are 44 percent of the time), the market cranks at a nearly 19 percent rate. When they're both negative, it's best to be out of the market. The allocation line in the top clip is a good reflection of what has happened going long the S&P 500 Total Return when both indicators are positive, and holding 90-day commercial paper otherwise.

The contribution to the Fab Five Combo component is –1 when both are negative, 0 when mixed, and +1 when both indicators are positive.

Figure 3.30 is a mix of trend-sensitive, monetary, and sentiment indicators (sound familiar?). Half of the model is trend-sensitive (based on

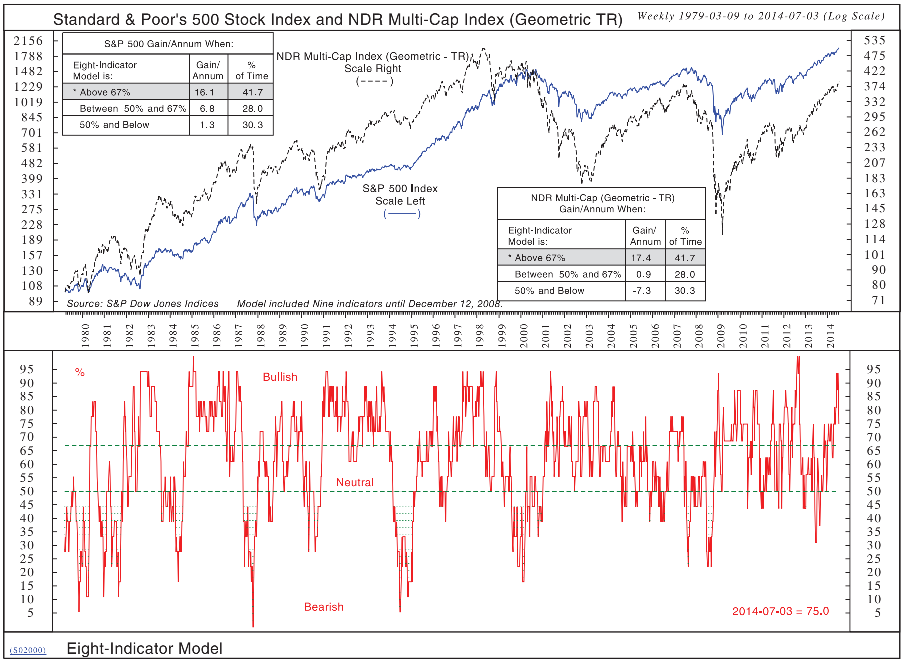
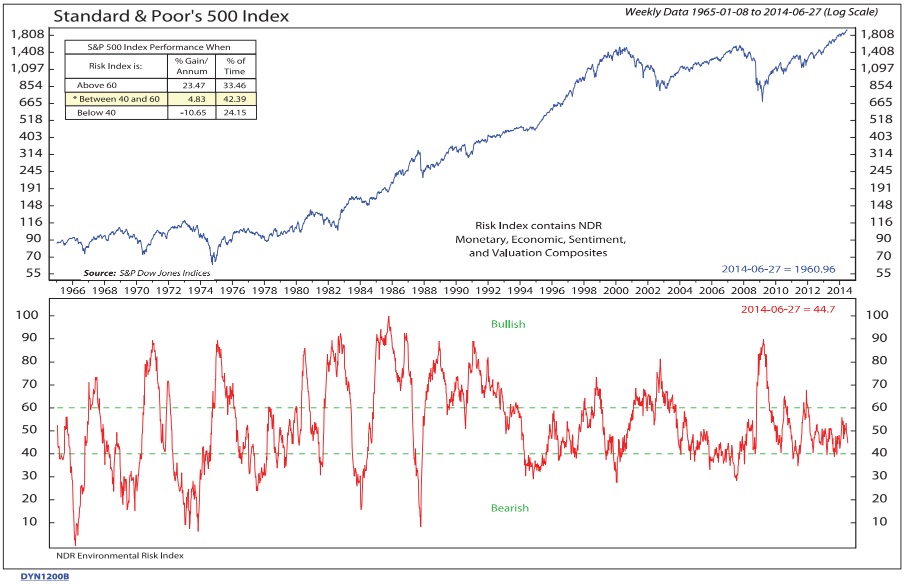


FIGURE 3.30 ***TOP*, S&P 500 INDEX AND NDR MULTI-CAP INDEX (GEOMETRIC TR); *BOTTOM*, EIGHT-INDICATOR MODEL**

breadth, to be specific) and half is external. This model was highlighted in Tim Hayes' 2000 book *The Research Driven Investor*. Back then it was called the Nine-Indicator Model, and the only change to it has been the dropping of the NYSE Member Short Ratio. This is a case of a decent indicator no longer being published. There have been many over the years. Here's a quick list of the eight:

1. NYSE weekly new lows is a simple indicator based on new 52-week lows as a percentage of total issues. Very low values are positive, while high values are negative.
2. Net new highs is basically NYSE weekly new highs minus new lows, as a percentage of total NYSE issues. High values are positive, while low values are negative.
3. S&P 500 reversals is a simple slope of the S&P 500. When the S&P 500 falls from a high by a certain percentage, this indicator goes negative. When it rises from a low by a certain percentage, it goes positive.
4. All Markets Open 40 Trading Index is an indicator that combines breadth data from all three U.S. markets (AMEX, NASDAQ, and NYSE) and calculates TRIN on a 40-day basis. This TRIN is then treated with a 6-month moving standard deviation with brackets. It's very similar to the TRIN indicator in the Fab Five sentiment component (which combines a 10 and a 30).
5. Bond yield/earnings yield change is a relative valuation indicator that compares bond yields to earnings yields. When the 6-month change in this ratio is high, the indicator is negative, while low is positive.
6. Composite bond yield reversals is another slope indicator; in this case the slope is applied to the long-term Treasury bond yield. A drop in the yield by a certain percentage is positive, while a rise is negative.
7. Prime rate reversals is another great Don't Fight the Fed indicator. When the prime rate falls by a certain percentage it's time to buy; when it rises by another percentage it's time to sell.
8. CCI momentum was discussed in the Fab Five monetary component.

The contribution to the Fab Five Combo component is −1 below 50 percent, 0 between 50 percent and 67 percent, and +1 above 67 percent.



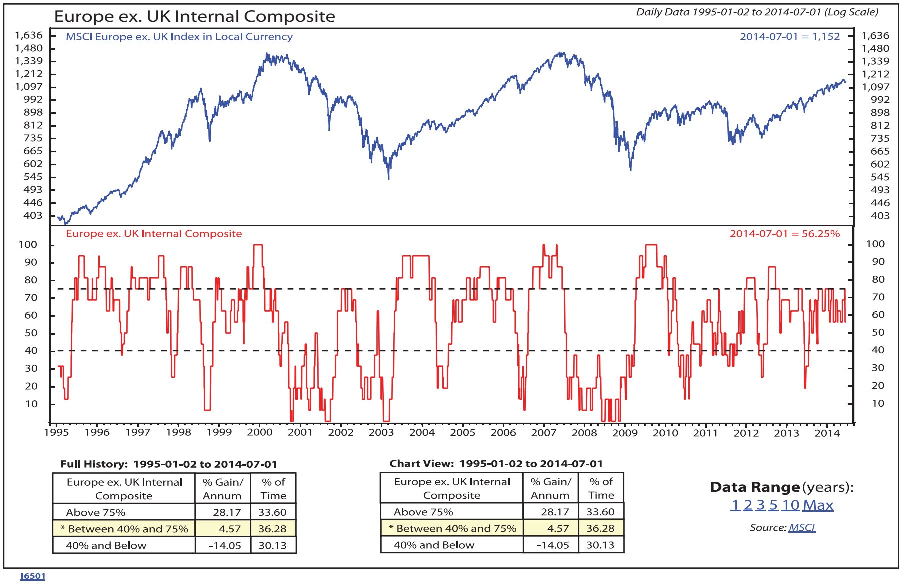
S&P 500 Index Performance When		
Risk Index is:	% Gain/ Annum	% of Time
Above 60	23.47	33.46
* Between 40 and 60	4.83	42.39
Below 40	-10.65	24.15

FIGURE 3.31 *TOP*, S&P 500 INDEX; *BOTTOM*, ENVIRONMENTAL RISK INDEX

The Environmental Risk Index shown in Figure 3.31 is a composite of four external components, including monetary, economic, sentiment, and valuation. There are 71 total indicators in the model. It's another Ned Davis Research original and is designed to reflect the investing environment, but is not meant as a trading model. The seeds of the model go back to the 1980s, and although it has been reworked over the years it has remained essentially unchanged since 1995. However, we have had some attrition in the indicator mix: we lost a *BusinessWeek* index in 2009 and our big favorite, the Zweig sentiment indicator, in 2004.

The contribution to the Fab Five Combo component is –1 below 40 percent, 0 between 40 and 60 percent, and +1 above 60 percent.

The model shown in Figure 3.32 was built to call the MSCI Europe ex UK Index (which captures 14 developed markets in Europe excluding the United Kingdom), and it turns out, does a decent job calling the S&P 500 as well. It combines eight trend-sensitive indicators, and it's presented as a diffusion index. This adds a bit more diversity to the Combo component



Full History: 1995-01-02 to 2014-07-01

Europe ex. UK Internal Composite	% Gain/ Annum	% of Time
Above 75%	28.17	33.60
* Between 40% and 75%	4.57	36.28
40% and Below	-14.05	30.13

Chart View: 1995-01-02 to 2014-07-01

Europe ex. UK Internal Composite	% Gain/ Annum	% of Time
Above 75%	28.17	33.60
* Between 40% and 75%	4.57	36.28
40% and Below	-14.05	30.13

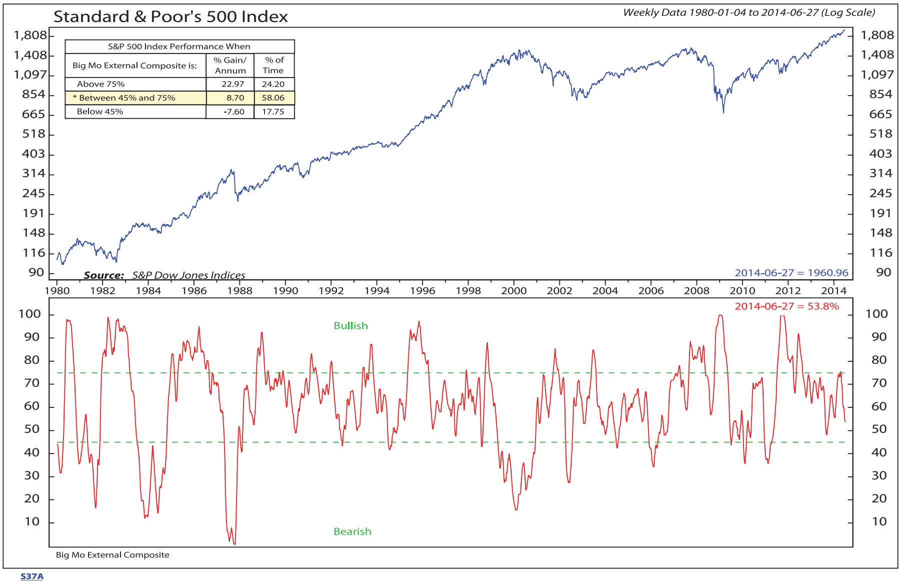
FIGURE 3.32 ***TOP*, MSCI EUROPE EX UK INDEX IN LOCAL CURRENCY; *BOTTOM*, EUROPE EX U.K. INTERNAL COMPOSITE**

and cements the fact that big moves in stocks tend to be global, and that U.S. corporations have become more tied to world markets.

The contribution to the Fab Five Combo component is −1 below 40 percent, 0 between 40 percent and 75 percent, and +1 above 75 percent.

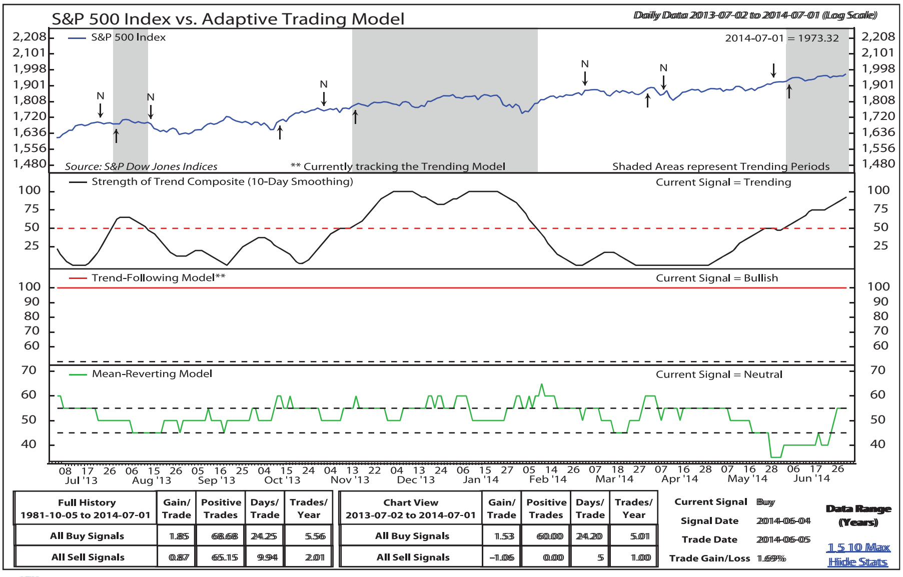
I discussed Big Mo Tape in the Fab Five tape section; now it's time to discuss this model's other half shown in Figure 3.33. As with a number of our external composites, this contains a thematic mix of indicators: economic, interest rates, sentiment, and valuation. The overlap with other external composites is pretty small. Three of these indicators are used elsewhere in the Fab Five, but that shouldn't pose a problem since they make up just 15 percent of this model. There are five indicators in each theme (for a total of 20 indicators), and they are added up to create the Big Mo External Diffusion Index. As with all of our models, each indicator is monitored periodically, and we replace any that are misbehaving.

The contribution to the Fab Five Combo component is −1 below 45 percent, 0 between 45 and 75 percent, and +1 above 75 percent.



S&P 500 Index Performance When		
Big Mo External Composite is:	% Gain/ Annum	% of Time
Above 75%	22.97	24.20
* Between 45% and 75%	8.70	58.06
Below 45%	-7.60	17.75

FIGURE 3.33 *TOP*, S&P 500 INDEX; *BOTTOM*, BIG MO EXTERNAL COMPOSITE



Full History 1981-10-05 to 2014-07-01	Gain/ Trade	Positive Trades	Days/ Trade	Trades/ Year
All Buy Signals	1.85	68.68	24.25	5.56
All Sell Signals	0.87	65.15	9.94	2.01

Chart View 2013-07-02 to 2014-07-01	Gain/ Trade	Positive Trades	Days/ Trade	Trades/ Year
All Buy Signals	1.53	60.00	24.20	5.01
All Sell Signals	–1.06	0.00	5	1.00

Current Signal	Buy
Signal Date	2014-06-04
Trade Date	2014-06-05
Trade Gain/Loss	1.69%

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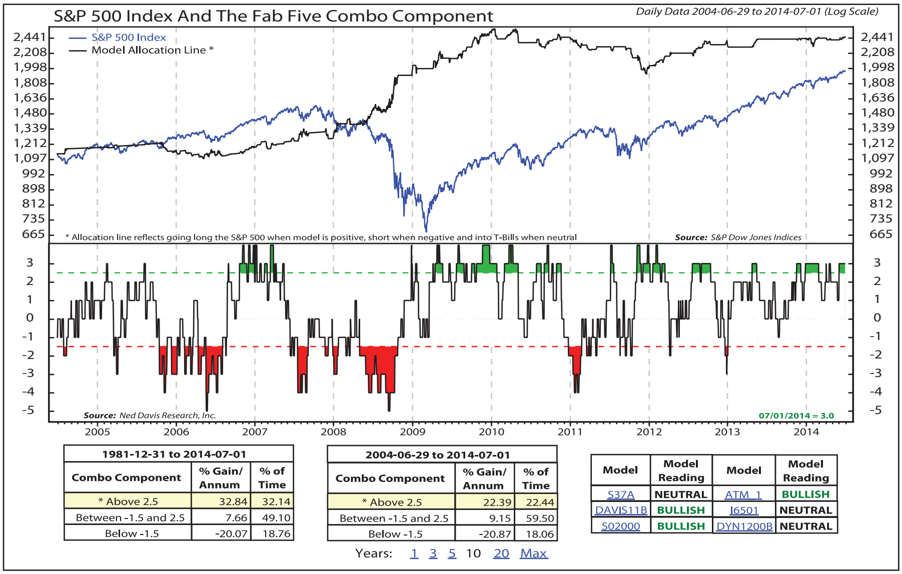
FIGURE 3.34 S&P 500 INDEX VERSUS THE ADAPTIVE TRADING MODEL

We now come to the last piece of the puzzle—the Adaptive Trading Model in Figure 3.34. It consists of three components. Component number one is designed to distinguish between a trending market and a mean-reverting market (that's the adaptive part). In a trending market, component number two, the ATM Trend Model, takes over. And in a mean-reverting market, component number three, the Mean-Reverting Model, takes the helm.

While this all sounds complicated, it's really quite straightforward. The ATM Trend Model has only four fairly uncomplicated indicators, while the Mean-Reverting Model has five. The model controlling the switch has four. Still, this model has the same weight as the other six in the Fab Five Combo component and the contribution can be −1, 0, and +1. The Trend Model is never neutral, but the Mean-Reverting Model can be.

COMBO MODEL SUMMARY

Since there are six total indicators, the range of the model shown in Figure 3.35 is −6 to +6. The brackets are set at −1.5 and 2.5, and to be



1981-12-31 to 2014-07-01		
Combo Component	% Gain/ Annum	% of Time
* Above 2.5	32.84	32.14
Between -1.5 and 2.5	7.66	49.10
Below -1.5	-20.07	18.76

2004-06-29 to 2014-07-01		
Combo Component	% Gain/ Annum	% of Time
* Above 2.5	22.39	22.44
Between -1.5 and 2.5	9.15	59.50
Below -1.5	-20.87	18.06

Years: 1 3 5 10 20 Max

Model	Model Reading	Model	Model Reading
S37A	NEUTRAL	ATM_1	BULLISH
DAVIS11B	BULLISH	I6501	NEUTRAL
S02000	BULLISH	DYN1200B	NEUTRAL

DAVIS504

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FIGURE 3.35 *TOP*, S&P 500 INDEX AND MODEL ALLOCATION LINE; *BOTTOM*, FAB FIVE COMBO COMPONENT

consistent with the other major Fab Five components, the model is designed to work in four preset date ranges.

SUMMING UP THE FAB FIVE

Now that we've seen the components of the Fab Five, it's (finally!) time to add them together. Each component model is reduced to +1, 0, or –1 (with the exception of the tape component, which gets +2, 0, or –2), and the result is a simple sum. This leaves the overall model's range at –5 to +5, with the brackets set at –1.5 and 1.5 (see Figure 3.1).

HOW WE USE THE FAB FIVE

I opened this chapter explaining that the Fab Five is an environmental model that provides a unified view and ties together sometimes opposing investment themes. If the model is outright bullish then our outlook will be on the bullish side. If it's merely flirting with the upper bracket we might temper our bullishness. We might make a distinction between high neutral and low neutral, depending on whether the model is moving up or down. For example, if it shifts from bearish to neutral, we might consider that hopeful. But going from bullish to neutral could make us cautious. We would never deviate too far from the Fab Five's basic verdict. If it's bullish we won't be bearish: we might be mildly bullish, but never bearish. Even though this model isn't designed for trading, traders can still use it to make decisions about whether they should have a bullish or bearish bias. If the short side is your thing then you should be a little more careful if the Fab Five is in bullish mode, and vice versa. At any rate, we still look to other inputs when evaluating our market position, but always in the context of the Fab Five.

CHAPTER 4

A Simple Model for Bonds

LOREN FLATH

About 10 years ago Ned got wind of a TradeStation seminar at the Venetian Hotel in Las Vegas. He is always looking for new ideas on markets and trading, and he thought I might learn something about new software or new analytical techniques. It was a three-day ordeal, with workshops of various kinds hosted by some very sharp people with truly interesting—and in some cases, somewhat complicated—trading methodologies. A number of the presenters had advanced degrees and managed money with the techniques they were showing us. Originally called System Writer, TradeStation started as a computer program for developing trading systems that could use a plethora of technical analysis tools. By 2004 it had evolved into a very sophisticated platform complete with automated trading: If you built a model with specific rules for buying and selling, you could put the system on automatic pilot.

On the last day of the seminar there was an elaborate lunch. Following our meal we were introduced to the guest speaker, Nelson Freeburg. I remember quite well his discussion of real-time models, and how so few of them actually continue to work as time passes. After investigating many models he had found only four true to their back-testing promises. He discussed the details of each, and when he got to number four he emphasized that he had saved the best for last. Then he proceeded to show the real-time results for the bond model presented in Marty Zweig's book *Winning with New IRAs*. I nearly choked on my carrot cake as I listened to him go over the details of the model that I had built for Marty's book in early 1986! I had long forgotten that model and had no inkling of its real-time performance. Ned was right: I did learn something!

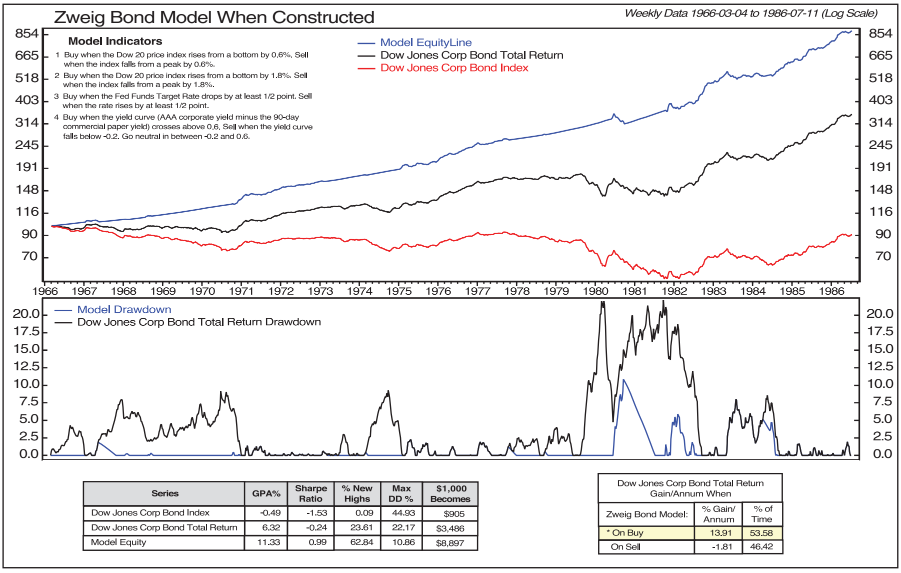
I'll go over the model in detail, but in reality there is not a whole lot to go over. The late, great Marty Zweig, an accomplished investment advisor and market technician, was adamant that the model be as simple as possible. He wanted his readers to be able to calculate each indicator weekly in just a few minutes themselves. No laborious calculations, no hard-to-find data, no complicated concepts. As he pointed out in his book: "We tried to keep the model as simple as possible while adhering to two of my key general principles, which apply to the stock market as well—namely, staying in gear with the tape and in gear with the Fed."

Ned and I had our guidelines, but Marty had the final say. Since the book was about individual retirement accounts, it would have been nice to have developed the model with something tradable, like a bond mutual fund. But there was a dearth of historical mutual-fund data, so we instead used the Dow Jones 20 Bond Average, for which we had the weekly history going back to 1965. That index was composed of Baa-graded corporate bonds, and we had a facsimile for its yield. That let us back-test the model and then evaluate its predictive results against the index's actual total return. The very first version of the model I sent to Marty included moving-average and momentum calculations. "No," he said, "too complicated." (Computers weren't too common in the average home in 1986.) I made it still simpler. Here are the model's original four indicators:

1. The short-term slope of the Dow Jones 20 Bond Average: buy when the index rises from a bottom by 0.6 percent and sell when the index falls from a peak by 0.6 percent.
2. The longer term slope of the Dow Jones 20 Bond Average: buy when the index rises from a bottom by 1.8 percent and sell when it falls from a peak by 1.8 percent.
3. Changes in the discount rate: buy when the discount rate—the rate at which banks borrow from the Federal Reserve Bank—drops by at least one half of a percentage point and sell when the discount rate rises by at least a half point. This series ceased to be very relevant in 1989 when the central bank began influencing short-term rates via the Fed Funds rate—the rate at which banks borrow from one another. Now the indicator looks at half-point moves in the target rate that the Fed sets for Fed Funds.

4. The yield curve, based on the difference between the yields on AAA corporate bonds and 90-day commercial paper: buy when the spread crosses above 0.6 of a percentage point and sell when the spread falls below –0.2. Go neutral between –0.2 and 0.6.

In keeping with our KISS methodology, the model is a simple sum of the indicators' values. Thus its range is –4 to +4. Marty designed this model to give concrete buy and sell signals that were to be followed implicitly—no questions asked. He gave a detailed account of the model in Chapter 12 of *Winning with New IRAs*, complete with examples of how to trade with it and instructions on how to calculate each indicator. Figure 4.1 is a modernized version of the original chart of the model equity line as it appeared in the book. This was obviously a time in which managing risk was very important; in much of the 1966–1986 period interest rates climbed and bond prices fell. The model was long the benchmark only 54 percent of the time. Since this is a trading model, I have added the equity drawdown



Model Indicators

1. Buy when the Dow 20 price index rises from a bottom by 0.6%. Sell when the index falls from a peak by 0.6%.
2. Buy when the Dow 20 price index rises from a bottom by 1.8%. Sell when the index falls from a peak by 1.8%.
3. Buy when the Fed Funds Target Rate drops by at least 1/2 point. Sell when the rate rises by at least 1/2 point.
4. Buy when the yield curve (AAA corporate yield minus the 90-day commercial paper yield) crosses above 0.6. Sell when the yield curve falls below -0.2. Go neutral in between -0.2 and 0.6.

Series	GPA%	Sharpe Ratio	% New Highs	Max DD %	$1,000 Becomes
Dow Jones Corp Bond Index	-0.49	-1.53	0.09	44.93	$905
Dow Jones Corp Bond Total Return	6.32	-0.24	23.61	22.17	$3,486
Model Equity	11.33	0.99	62.84	10.86	$8,897

Dow Jones Corp Bond Total Return Gain/Annum When		
Zweig Bond Model:	% Gain/ Annum	% of Time
* On Buy	13.91	53.58
On Sell	-1.81	46.42

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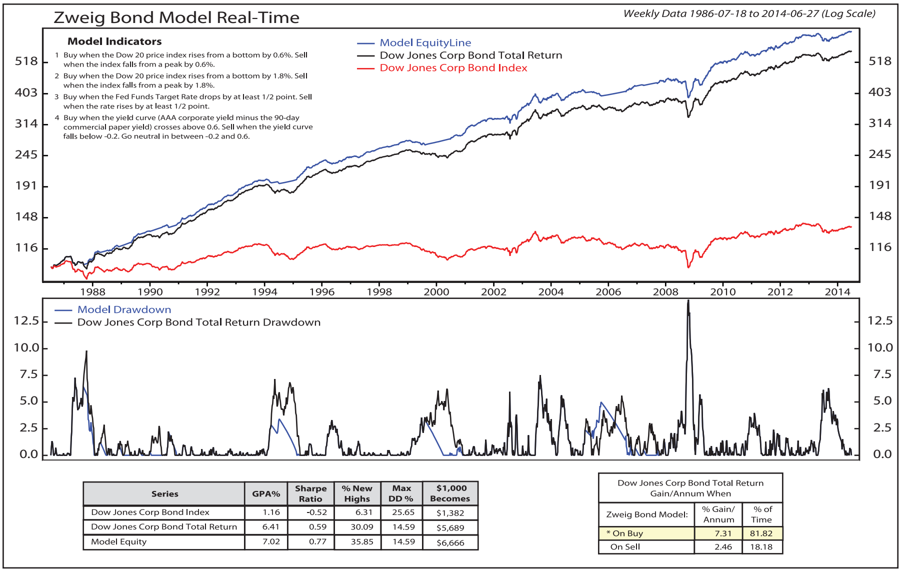
FIGURE 4.1 ZWEIG BOND MODEL WHEN CONSTRUCTED (1966–1986)



Model Indicators

1 Buy when the Dow 20 price index rises from a bottom by 0.6%. Sell when the index falls from a peak by 0.6%.
2 Buy when the Dow 20 price index rises from a bottom by 1.8%. Sell when the index falls from a peak by 1.8%.
3 Buy when the Fed Funds Target Rate drops by at least 1/2 point. Sell when the rate rises by at least 1/2 point.
4 Buy when the yield curve (AAA corporate yield minus the 90-day commercial paper yield) crosses above 0.6. Sell when the yield curve falls below -0.2. Go neutral in between -0.2 and 0.6.

Series	GPA%	Sharpe Ratio	% New Highs	Max DD %	$1,000 Becomes
Dow Jones Corp Bond Index	1.16	-0.52	6.31	25.65	$1,382
Dow Jones Corp Bond Total Return	6.41	0.59	30.09	14.59	$5,689
Model Equity	7.02	0.77	35.85	14.59	$6,666

Dow Jones Corp Bond Total Return Gain/Annum When		
Zweig Bond Model:	% Gain/ Annum	% of Time
* On Buy	7.31	81.82
On Sell	2.46	18.18

chart2

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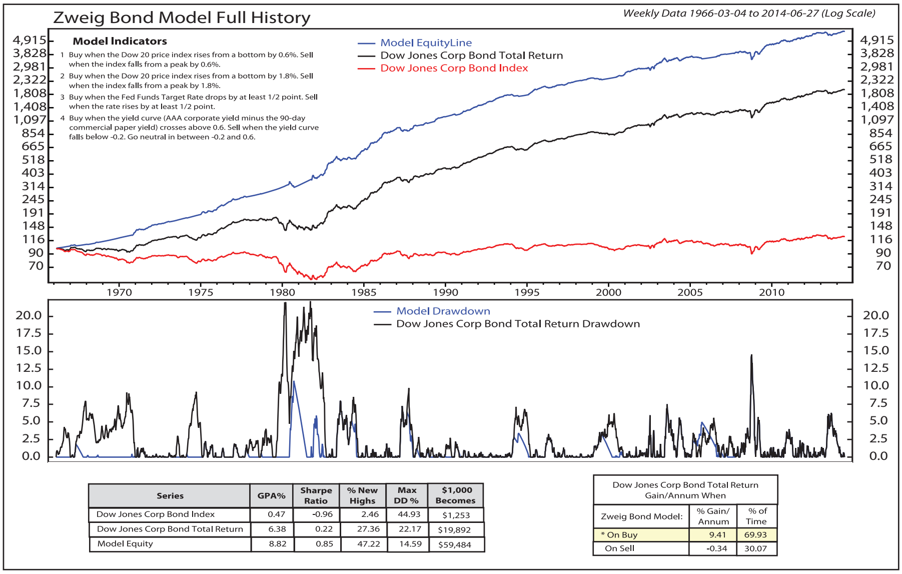
FIGURE 4.2 ZWEIG BOND MODEL REAL-TIME (1986–2014)

history in the bottom panel. (*Drawdown* is a Wall Street euphemism for a word investors despise: loss.) This reveals a nearly 11 percent drop on September 26, 1980.

The chart in Figure 4.2 shows how the model has done since Marty's book was sent to press in July 1986. During this period bond prices have gone nearly straight up. Timing a move like that is challenging and quite often disappointing. In this case, the model has spent only about a quarter of the time in cash. The worst period was during the 2008 debacle, when both monetary indicators were bullish while both trend indicators went bearish, causing the prior buy signal to become locked in. This caused a drawdown of 14.6 percent. The same thing happened in 2013, although the drawdown was somewhat less painful at just above 6 percent. Still, as can be seen from the Sharpe ratios the model has handily beaten a buy-and-hold strategy, with less risk. (The Sharpe ratio measures risk-adjusted performance; the higher the number, the better.)

Figure 4.3 shows the model for the full date range (1966–2014).



Model Indicators

1. Buy when the Dow 20 price index rises from a bottom by 0.6%. Sell when the index falls from a peak by 0.6%.
2. Buy when the Dow 20 price index rises from a bottom by 1.8%. Sell when the index falls from a peak by 1.8%.
3. Buy when the Fed Funds Target Rate drops by at least 1/2 point. Sell when the rate rises by at least 1/2 point.
4. Buy when the yield curve (AAA corporate yield minus the 90-day commercial paper yield) crosses above 0.6. Sell when the yield curve falls below -0.2. Go neutral in between -0.2 and 0.6.

Series	GPA%	Sharpe Ratio	% New Highs	Max DD %	$1,000 Becomes
Dow Jones Corp Bond Index	0.47	-0.96	2.46	44.93	$1,253
Dow Jones Corp Bond Total Return	6.38	0.22	27.36	22.17	$19,892
Model Equity	8.82	0.85	47.22	14.59	$59,484

Dow Jones Corp Bond Total Return Gain/Annum When		
Zweig Bond Model:	% Gain/ Annum	% of Time
* On Buy	9.41	69.93
On Sell	-0.34	30.07

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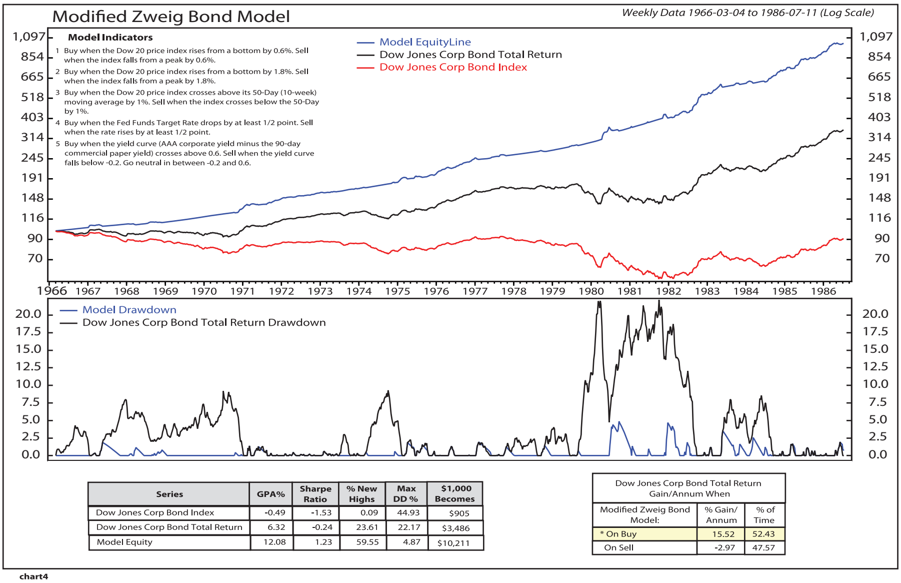
FIGURE 4.3 ZWEIG BOND MODEL FULL HISTORY (1966–2014)

A Slight Modification

Back in 2004, following the TradeStation seminar, I put revisiting the model on the back burner. When the decision was made to update *Being Right or Making Money*, we thought we would just reprise the bond model from the 2000 edition. But then we thought it might be fun to actually highlight a model that had come to life in the mid-1980s and had been quite successful.

Now that we have done that, let's look more deeply at the model. Two things jump out: (1) the losses show that the trend component doesn't get you out of the market when the Fed is easy and prices are falling, and (2) you couldn't really trade the Dow 20 when it existed, let alone now, when it doesn't.

To minimize potential losses, I added a simple trend indicator: a 50-day (10-week) moving average of the Dow 20's price with a cross of 1 percent (this is a favorite of ours for calculating diffusion indices). If the Dow 20's price crosses below its 50-day average by at least 1 percent, this indicator goes negative. Crossing above the 50-day by at least 1 percent sends the



Model Indicators

1 Buy when the Dow 20 price index rises from a bottom by 0.6%. Sell when the index falls from a peak by 0.6%.
2 Buy when the Dow 20 price index rises from a bottom by 1.8%. Sell when the index falls from a peak by 1.8%.
3 Buy when the Dow 20 price index crosses above its 50-Day (10-week) moving average by 1%. Sell when the index crosses below the 50-Day by 1%.
4 Buy when the Fed Funds Target Rate drops by at least 1/2 point. Sell when the rate rises by at least 1/2 point.
5 Buy when the yield curve (AAA corporate yield minus the 90-day commercial paper yield) crosses above 0.6. Sell when the yield curve falls below -0.2. Go neutral in between -0.2 and 0.6.

Series	GPA%	Sharpe Ratio	% New Highs	Max DD %	$1,000 Becomes
Dow Jones Corp Bond Index	-0.49	-1.53	0.09	44.93	$905
Dow Jones Corp Bond Total Return	6.32	-0.24	23.61	22.17	$3,486
Model Equity	12.08	1.23	59.55	4.87	$10,211

Dow Jones Corp Bond Total Return Gain/Annum When		
Modified Zweig Bond Model:	% Gain/ Annum	% of Time
* On Buy	15.52	52.43
On Sell	-2.97	47.57

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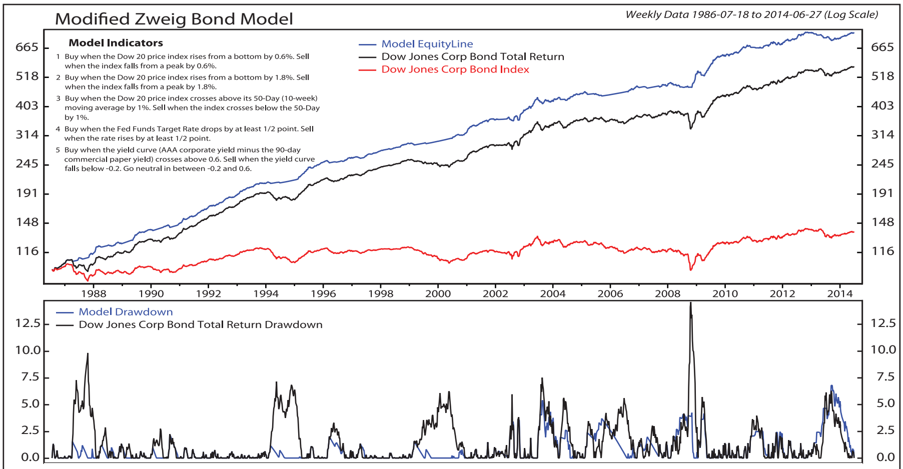
FIGURE 4.4 **MODIFIED ZWEIG BOND MODEL (1966–1986)**

indicator positive. With this addition the model is now a five-indicator model, and as with the original model, the sum of all the indicators needs to be a −1 or a +1 to get a signal. Figures 4.4, 4.5, and 4.6 show the modified model for the time ranges shown in Figures 4.1, 4.2, and 4.3, respectively. Note the dramatic reduction in losses and the added amount of time spent long. Also, the equity line spends more time making new highs in all three periods shown.

Now let's apply this model to something that is actually tradable today. Staying with the spirit of the Dow 20 Index, I looked in our database for a corporate bond fund that might match it and have a significant history. A good match was the Fidelity Investment Grade Bond Fund (FBNDX), known as Fidelity Flexible Bond in the 1980s. The results using the modified Zweig Bond Model signals can be seen in the chart in Figure 4.7. At the outset they don't appear impressive. But remember that we have been dealing with a very strong bond market during the time frame covered (1986–2014). What is significant is that the model does work, as reflected by the higher Sharpe ratio, lower drawdowns, and increased time spent long.



Model Indicators

1 Buy when the Dow 20 price index rises from a bottom by 0.6%. Sell when the index falls from a peak by 0.6%.
2 Buy when the Dow 20 price index rises from a bottom by 1.8%. Sell when the index falls from a peak by 1.8%.
3 Buy when the Dow 20 price index crosses above its 50-Day (10-week) moving average by 1%. Sell when the index crosses below the 50-Day by 1%.
4 Buy when the Fed Funds Target Rate drops by at least 1/2 point. Sell when the rate rises by at least 1/2 point.
5 Buy when the yield curve (AAA corporate yield minus the 90-day commercial paper yield) crosses above 0.6. Sell when the yield curve falls below -0.2. Go neutral in between -0.2 and 0.6.

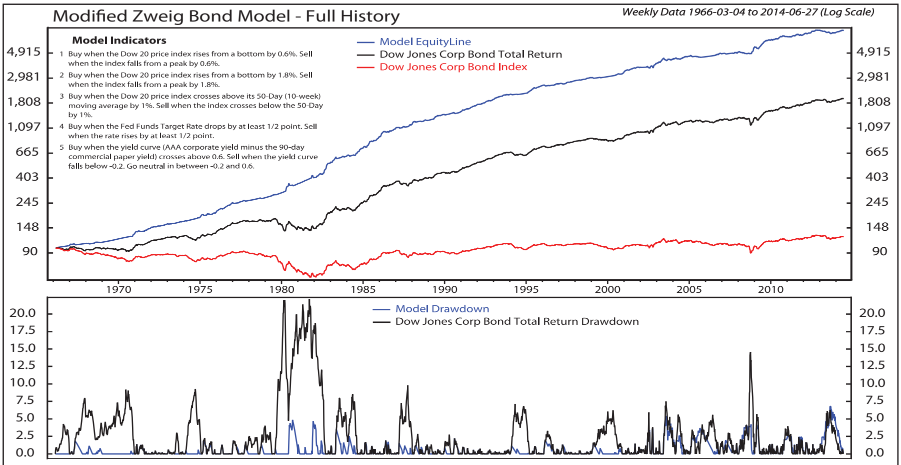
Series	GPA%	Sharpe Ratio	% New Highs	Max DD %	$1,000 Becomes
Dow Jones Corp Bond Index	1.16	-0.52	6.31	25.65	$1,382
Dow Jones Corp Bond Total Return	6.41	0.59	30.09	14.59	$5,689
Model Equity	7.53	1.05	37.01	6.79	$7,612

Dow Jones Corp Bond Total Return Gain/Annum When		
Modified Zweig Bond Model:	% Gain/ Annum	% of Time
* On Buy	8.77	71.82
On Sell	0.65	28.18

chart5

Please see important disclaimer at the beginning of the book.

FIGURE 4.5 **MODIFIED ZWEIG BOND MODEL (1986–2014)**



Model Indicators

1 Buy when the Dow 20 price index rises from a bottom by 0.6%. Sell when the index falls from a peak by 0.6%.
2 Buy when the Dow 20 price index rises from a bottom by 1.8%. Sell when the index falls from a peak by 1.8%.
3 Buy when the Dow 20 price index crosses above its 50-Day (10-week) moving average by 1%. Sell when the index crosses below the 50-Day by 1%.
4 Buy when the Fed Funds Target Rate drops by at least 1/2 point. Sell when the rate rises by at least 1/2 point.
5 Buy when the yield curve (AAA corporate yield minus the 90-day commercial paper yield) crosses above 0.6. Sell when the yield curve falls below -0.2. Go neutral in between -0.2 and 0.6.

Series	GPA%	Sharpe Ratio	% New Highs	Max DD %	$1,000 Becomes
Dow Jones Corp Bond Index	0.47	-0.96	2.46	44.93	$1,253
Dow Jones Corp Bond Total Return	6.38	0.22	27.36	22.17	$19,892
Model Equity	9.43	1.13	46.47	6.79	$77,960

Dow Jones Corp Bond Total Return Gain/Annum When		
Modified Zweig Bond Model:	% Gain/ Annum	% of Time
* On Buy	11.07	63.67
On Sell	-1.37	36.33

chart6

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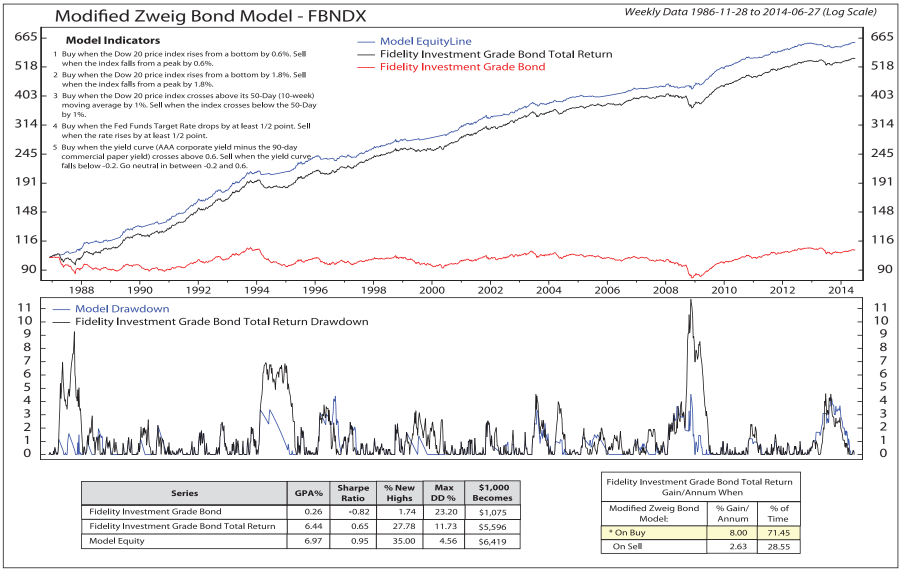
FIGURE 4.6 **MODIFIED ZWEIG BOND MODEL FULL HISTORY (1966–2014)**



Model Indicators

1. Buy when the Dow 20 price index rises from a bottom by 0.6%. Sell when the index falls from a peak by 0.6%.
2. Buy when the Dow 20 price index rises from a bottom by 1.8%. Sell when the index falls from a peak by 1.8%.
3. Buy when the Dow 20 price index crosses above its 50-Day (10-week) moving average by 1%. Sell when the index crosses below the 50-Day by 1%.
4. Buy when the Fed Funds Target Rate drops by at least 1/2 point. Sell when the rate rises by at least 1/2 point.
5. Buy when the yield curve (AAA corporate yield minus the 90-day commercial paper yield) crosses above 0.6. Sell when the yield curve falls below -0.2. Go neutral in between -0.2 and 0.6.

Series	GPA%	Sharpe Ratio	% New Highs	Max DD %	$1,000 Becomes
Fidelity Investment Grade Bond	0.26	-0.82	1.74	23.20	$1,075
Fidelity Investment Grade Bond Total Return	6.44	0.65	27.78	11.73	$5,596
Model Equity	6.97	0.95	35.00	4.56	$6,419

Fidelity Investment Grade Bond Total Return Gain/Annum When		
Modified Zweig Bond Model:	% Gain/ Annum	% of Time
* On Buy	8.00	71.45
On Sell	2.63	28.55

chart7

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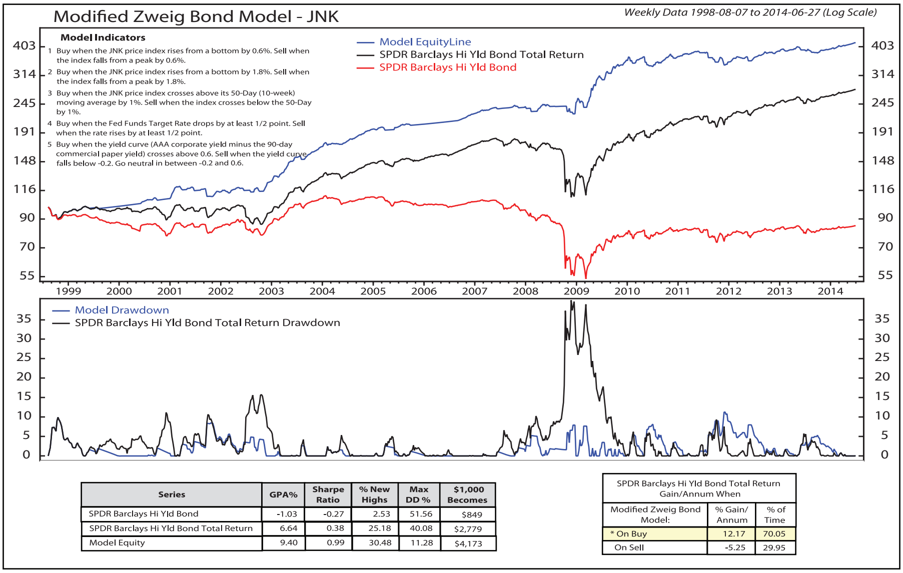
FIGURE 4.7 **MODIFIED ZWEIG BOND MODEL WITH FBNDX**



Model Indicators

1. Buy when the JNK price index rises from a bottom by 0.6%. Sell when the index falls from a peak by 0.6%.
2. Buy when the JNK price index rises from a bottom by 1.8%. Sell when the index falls from a peak by 1.8%.
3. Buy when the JNK price index crosses above its 50-Day (10-week) moving average by 1%. Sell when the index crosses below the 50-Day by 1%.
4. Buy when the Fed Funds Target Rate drops by at least 1/2 point. Sell when the rate rises by at least 1/2 point.
5. Buy when the yield curve (AAA corporate yield minus the 90-day commercial paper yield) crosses above 0.6. Sell when the yield curve falls below -0.2. Go neutral in between -0.2 and 0.6.

Series	GPA%	Sharpe Ratio	% New Highs	Max DD %	$1,000 Becomes
SPDR Barclays Hi Yld Bond	-1.03	-0.27	2.53	51.56	$849
SPDR Barclays Hi Yld Bond Total Return	6.64	0.38	25.18	40.08	$2,779
Model Equity	9.40	0.99	30.48	11.28	$4,173

SPDR Barclays Hi Yld Bond Total Return Gain/Annum When		
Modified Zweig Bond Model:	% Gain/ Annum	% of Time
* On Buy	12.17	70.05
On Sell	-5.25	29.95

chart8

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FIGURE 4.8 **MODIFIED ZWEIG BOND MODEL WITH JNK**

For those of you who really like to trade: we've found over the years that a decent model built for one index can produce surprising results when applied to another that's highly correlated but more volatile. Figure 4.8 shows the same model shown in Figure 4.7 calculated on the price of the SPDR Barclays High Yield Bond ETF (JNK) instead, with the results based on its total return. As for trade frequency, the trades averaged about 0.7 per year.

SUMMARY

A note for those of you who have Marty Zweig's *Winning with New IRAs* or plan to obtain a copy: in it, Marty did a great job explaining this model. His book includes numerous details, tables, and charts to accompany the dialog. However, he writes that a buy signal comes at +3 and a sell at –3. This reflects an error in communication between the two of us. In reality, all of the results summarized in Chapter 12 of his book are based on signals at –1 and +1. Since Marty's book was published, the Dow Jones 20 Bond Index has morphed into the Dow Jones Equal Weight U.S. Issued Corporate Bond Index, and it can be found in many places, including Google and Yahoo Finance.

In sum, the Zweig Bond Model shows that keeping it simple can pay off. Marty Zweig knew this when he approached us to build it back in 1985. The basic principles were true then and still true now: don't fight the tape, and don't fight the Fed. In the words of the inimitable Stan Lee: 'nuff said!

CHAPTER 5

Potential Bear Market in 2014; Bearish Secular Residue and Then Buying Opportunity

NED DAVIS

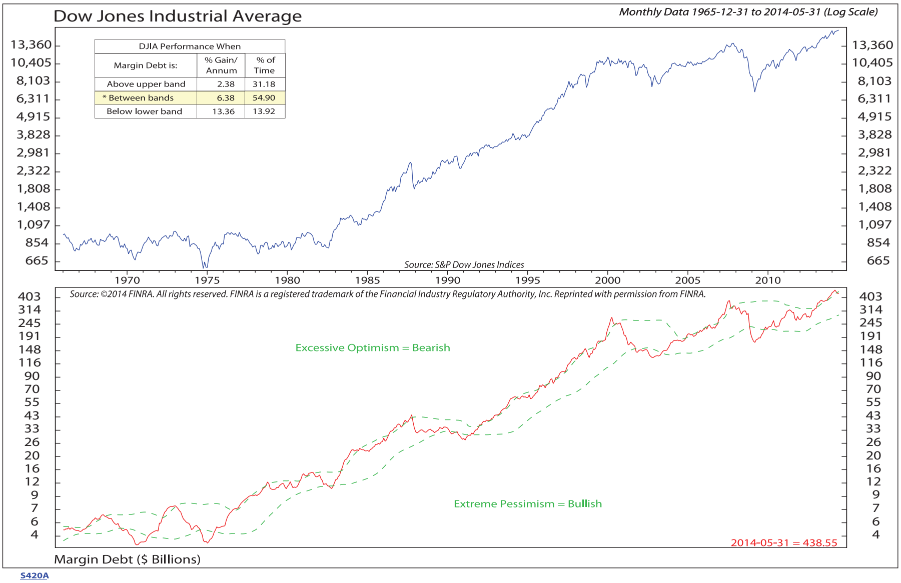
PREPARING FOR A (SAY, 20 PERCENT) BEAR MARKET

The case for a bear market in 2014 largely comes from the overbought, overvalued, and overbelieved sentiment we saw at the end of 2013, but there are also some cyclical, demographic, and residual debt-bubble concerns that are worrisome. In this chapter I want to go through sentiment/valuation indicators, along with the tape and macro factors I use to manage risks in the stock market. I will also include some charts that I'll be watching to see where I could be wrong.

Let's start with the sentiment/valuation indicators that particularly bother me.

SENTIMENT AND VALUATION INDICATORS, IF ONE WANTED TO BE BEARISH

The weight of the indicator evidence currently leans bullish. There are always indicators that disagree with the weight of the evidence, so it is important that we have an objective model (like the Fab Five, which was explained in Chapter 3) to help keep us in line with basic conditions, such as a bullish tape and a friendly Fed.



DJIA Performance When		
Margin Debt is:	% Gain/ Annum	% of Time
Above upper band	2.38	31.18
* Between bands	6.38	54.90
Below lower band	13.36	13.92

Source: S&P Dow Jones Indices

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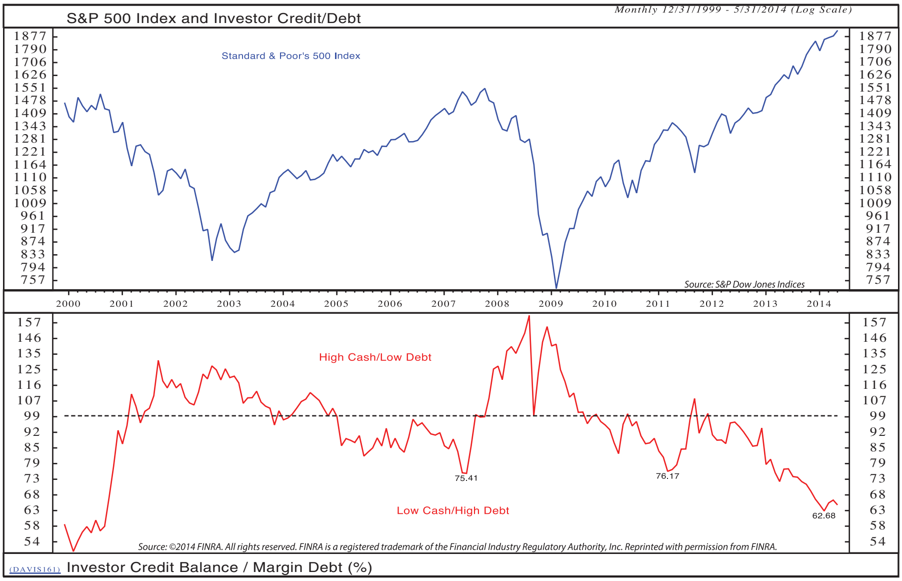
FIGURE 5.1 *TOP*, DOW JONES INDUSTRIAL AVERAGE; *BOTTOM*, MARGIN DEBT (IN BILLIONS)

Yet one never knows for certain in this business, and it may be helpful, for flexibility and an open mind, to know the other side of the debate, should trends change. So now let's look at some worrisome sentiment indicators that tell me we are in the later phase of the cyclical bull market, meaning the evidence now is just mildly, not wildly, bullish.

Among the evidence that bothers me is shown in Figure 5.1. Margin debt at the end of February 2014 was at record highs, even above those seen in 2000 and 2007. While margin debt is usually *bullish* as long as it is rising, we are in a zone that has, on average, suggested that the upside is limited.

Another way of looking at margin debt is to compare it to credit balances (cash at brokers). The latest reading shows less cash relative to debt than we saw at the 2007 and 2011 peaks, as featured in Figure 5.2.

Sentiment surveys are also consistent with what one often sees at important peaks in prices. In Figure 5.3, note that global consumer sentiment in the United States, the United Kingdom, Europe, and Japan was recently at levels above those in 2000 and 2007.


S&P 500 Index and Investor Credit/Debt

Monthly 12/31/1999 - 5/31/2014 (Log Scale)

Source: S&P Dow Jones Indices

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(DAVIS161) Investor Credit Balance / Margin Debt (%)

FIGURE 5.2 ***TOP*, S&P 500 INDEX; *BOTTOM*, INVESTOR CREDIT BALANCE/MARGIN DEBT**

And in the United States, advisory-service sentiment has recently flashed a sell signal, as featured on Figure 5.4. A number of the sell signals have been early (a very similar indicator is listed in our 10 leading indicators), so call this an early warning, but the indicator has also given a number of timely warnings. Again, we are at levels higher than at the tops in 2000 and 2007.

Mutual funds are largely fully invested, as Figure 5.5 shows, and customers have been buying stock funds strongly, relative to bond funds. Figure 5.6 shows slower going on the upside once the public flocks to stock funds. This suggests that the market does not rise as quickly once everyone is already heavily invested in stocks.

Figure 5.7 shows that inflows to stock funds late in 2013 were the heaviest since the peak in 2000.

Figure 5.8 shows that investors are at *record* lows in cash and very overweight equity funds. Stocks plus bond funds would be at record highs. This survey covers over $15.5 trillion in total assets. How many additional buyers are left?

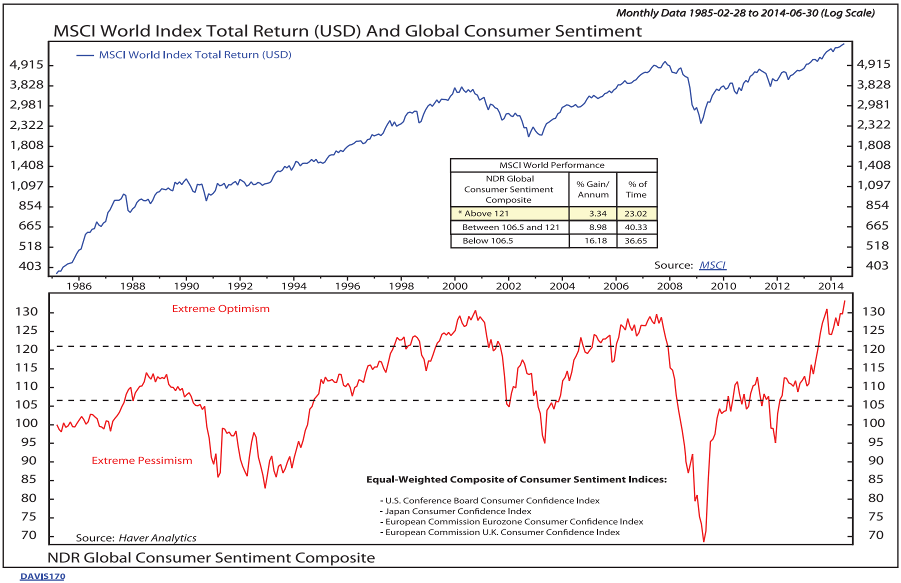

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FIGURE 5.3 *TOP*, MSCI WORLD INDEX TOTAL RETURN (USD); *BOTTOM*, NDR GLOBAL CONSUMER SENTIMENT COMPOSITE

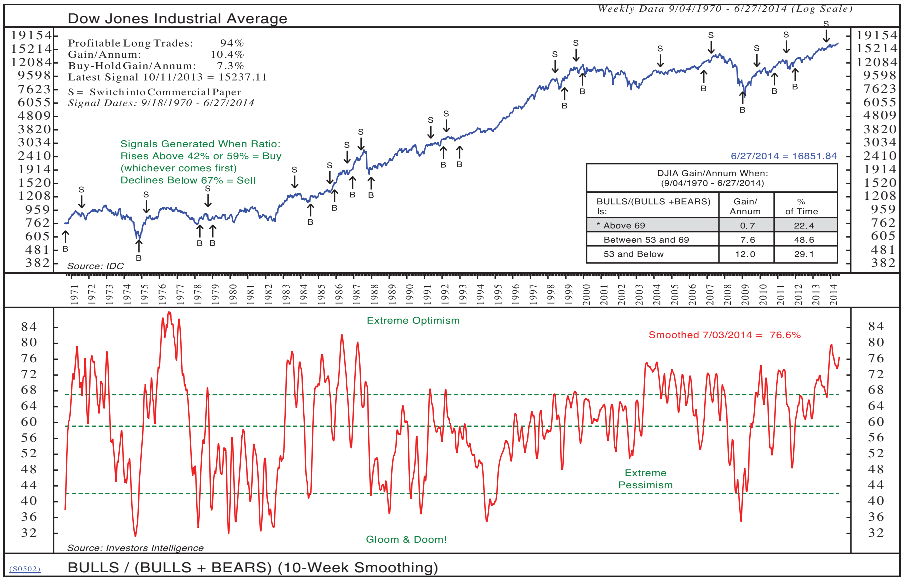

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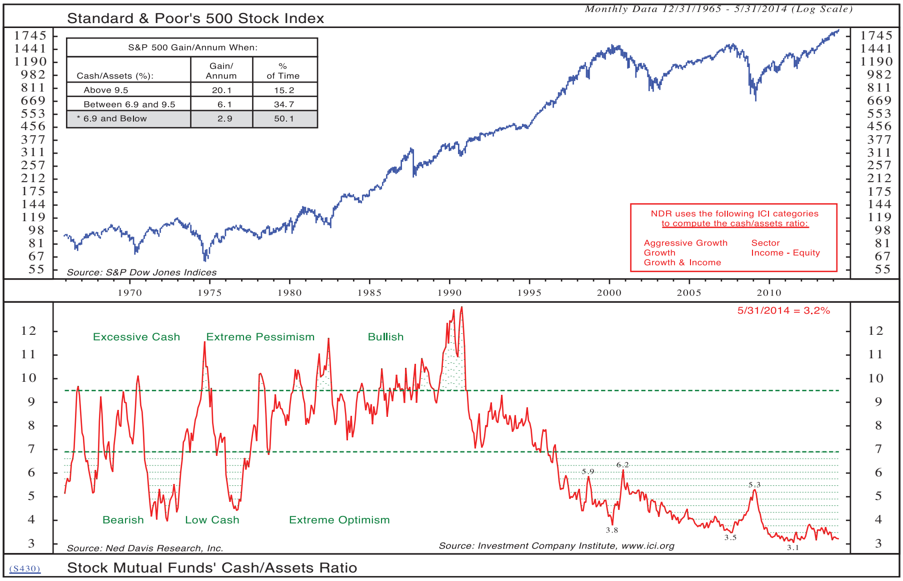
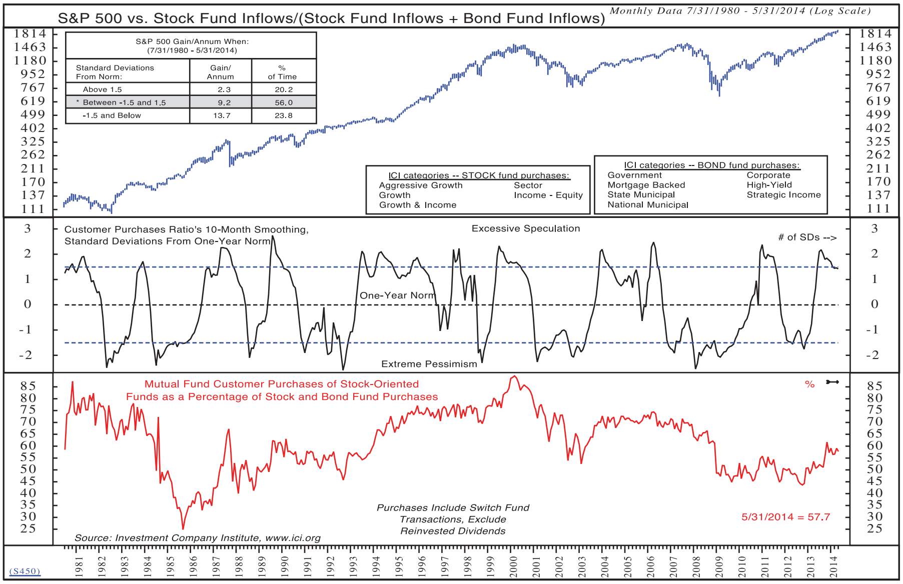
FIGURE 5.4 *TOP*, DJIA WITH BUY/SELL SIGNALS; *BOTTOM*, BULLS/(BULLS + BEARS) (10-WEEK SMOOTHING)



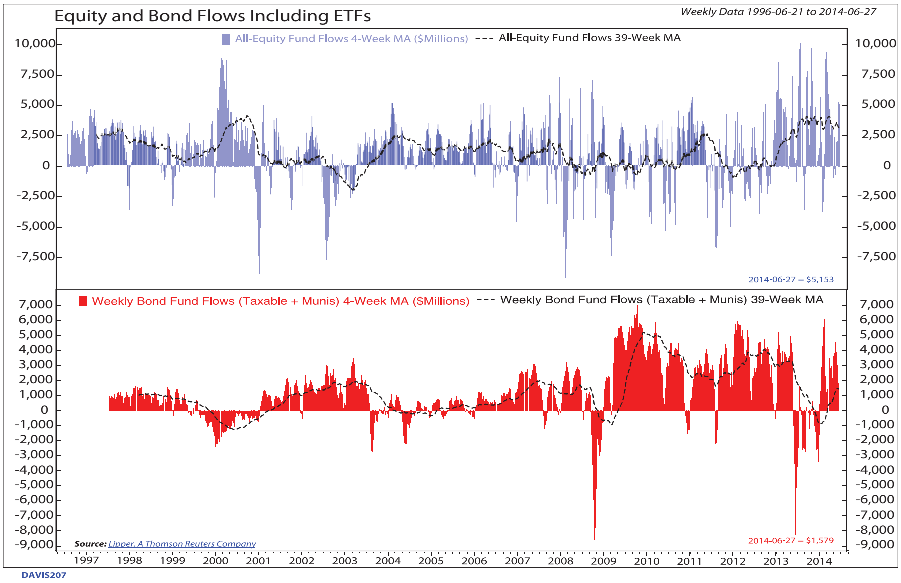
S&P 500 Gain/Annum When:		
Cash/Assets (%):	Gain/ Annum	% of Time
Above 9.5	20.1	15.2
Between 6.9 and 9.5	6.1	34.7
* 6.9 and Below	2.9	50.1

FIGURE 5.5 ***TOP***, **S&P 500 INDEX;** ***BOTTOM***, **STOCK MUTUAL FUNDS' CASH/ASSETS RATIO**



S&P 500 Gain/Annum When: (7/31/1980 - 5/31/2014)		
Standard Deviations From Norm:	Gain/ Annum	% of Time
Above 1.5	2.3	20.2
* Between -1.5 and 1.5	9.2	56.0
-1.5 and Below	13.7	23.8

FIGURE 5.6 **S&P 500 VERSUS STOCK FUND INFLOWS/(STOCK FUND INFLOWS + BOND FUND INFLOWS)**



Source: Lipper, A Thomson Reuters Company

FIGURE 5.7 EQUITY AND BOND FLOWS INCLUDING ETFS (EXCHANGE TRADED FUNDS)

Not only do mutual-fund managers not have much cash (see Figure 5.5) but overall cash in money-market funds is very low relative to stock prices (see Figure 5.9). Yes, I know that the yield on money markets is near zero and is causing great discomfort to savers. Nonetheless, this indicator is now probably my main concern. And it recently has moved into the bearish zone.

Active investment managers are also largely fully invested, as seen in survey results from the National Association of Active Investment Managers (NAAIM) in the bottom panel of Figure 5.10.

OTHER SENTIMENT INDICATORS

A number of other sentiment indicators are warning me to prepare for an NDR-defined bear market sometime during 2014.

One that concerns me is Figure 5.11. According to the Fed's Financial Accounts, households have 54.4 percent of their financial assets in stocks,

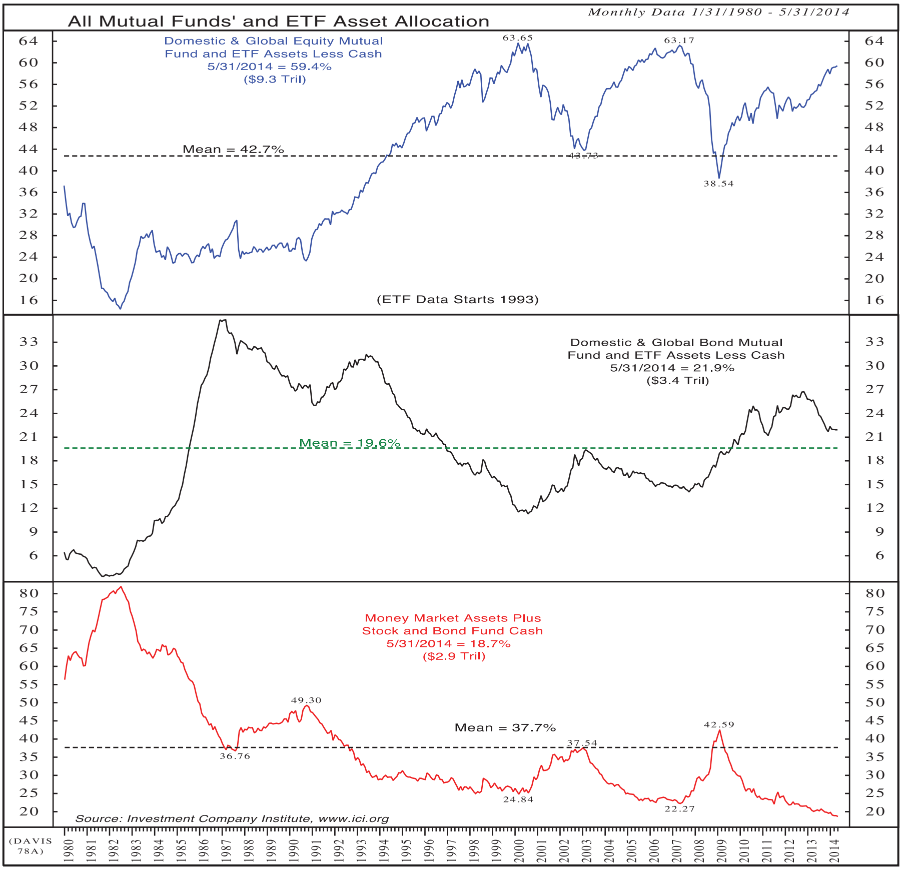


FIGURE 5.8 **ASSET ALLOCATION FOR ALL MUTUAL FUNDS AND ETFS**

23.2 percent in bonds, and 22.5 percent in cash. Although admittedly not as high as in 2000, the stock levels are almost comparable to those in 2007 and at the 1968 secular peak.

One good reason for thinking there is more upside before we see a bear market-type pullback is that while our polls of stock sentiment show excessive investor optimism, similar polls on U.S. consumer expectations show a very different picture.

For example, Figure 5.12 indicates that consumers are actually fairly cautious on the economy, and, as can be seen on the chart, that skepticism

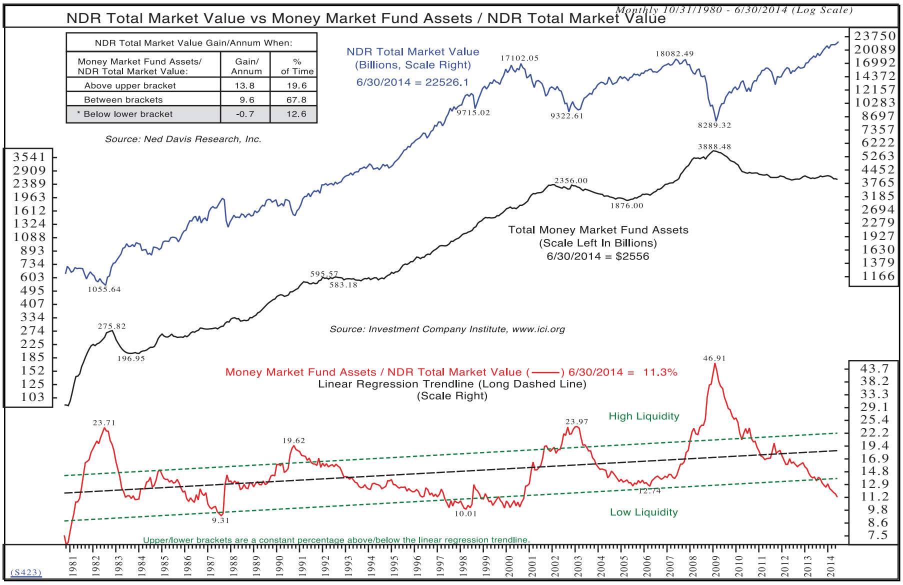


FIGURE 5.9 **NDR TOTAL MARKET VALUE VERSUS MONEY MARKET FUND ASSETS/NDR TOTAL MARKET VALUE**

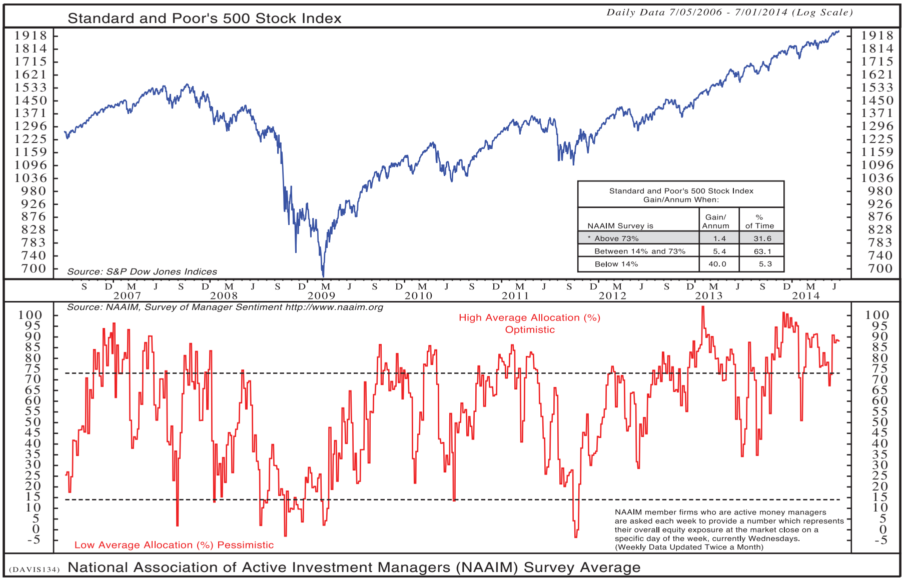
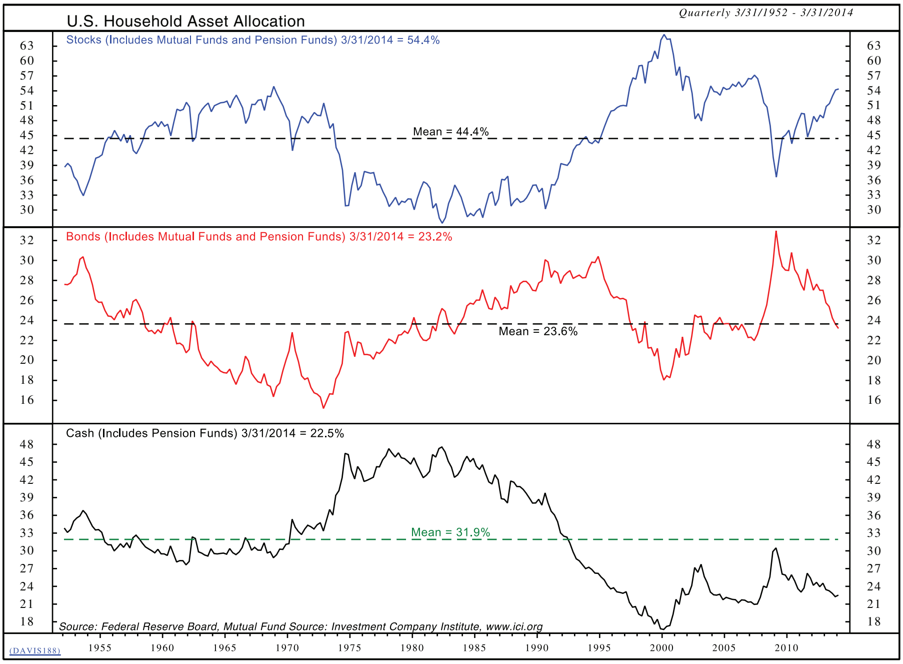
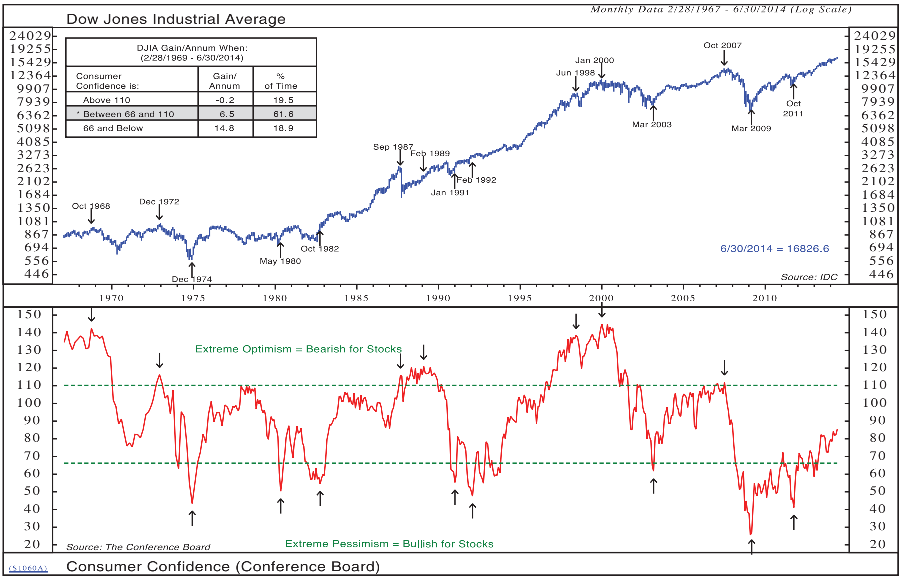


FIGURE 5.10 ***TOP*, S&P 500 INDEX; *BOTTOM*, NAAIM SURVEY AVERAGE**



Source: Federal Reserve Board, Mutual Fund Source: Investment Company Institute, www.ici.org

FIGURE 5.11 U.S. HOUSEHOLD ASSET ALLOCATION



DJIA Gain/Annum When:
(2/28/1969 - 6/30/2014)

Consumer Confidence is:	Gain/ Annum	% of Time
Above 110	-0.2	19.5
* Between 66 and 110	6.5	61.6
66 and Below	14.8	18.9

Source: IDC

Source: The Conference Board

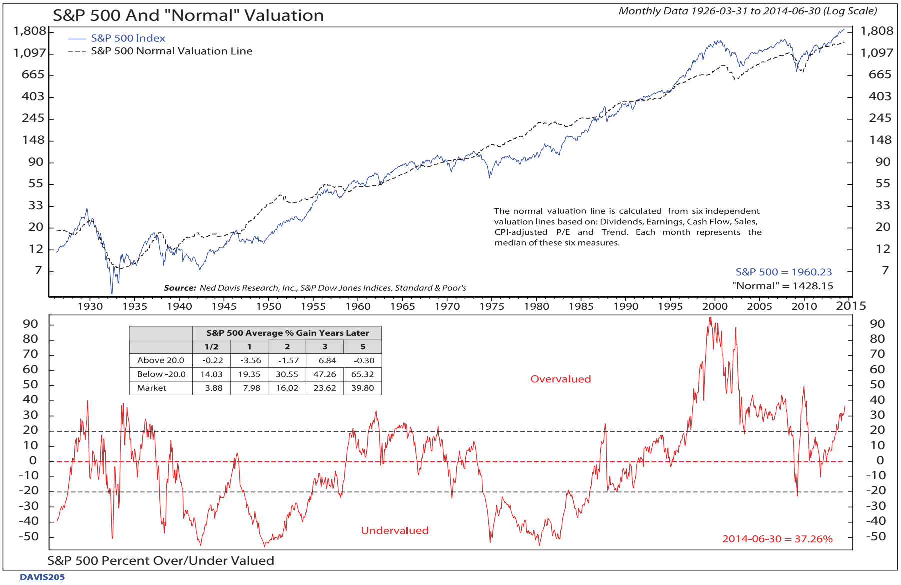
FIGURE 5.12 *TOP*, DOW JONES INDUSTRIAL AVERAGE; *BOTTOM*, CONSUMER CONFIDENCE (CONFERENCE BOARD)

has led to decent gains, on average, since 1967. It is possible that stock investors are very different from consumers, but as a contrarian to general social mood at extremes, I believe the consumer skepticism is a slight positive offset to the negative message of our polls. I think the time to get **really** prepared for danger is when euphoria is more widespread.

VALUATION PROBLEMS

Could the zero percent interest rates on money markets have forced so much money into stocks that we have created a valuation bubble? Well, our chart in Figure 5.13 shows that while not as extreme as in 2000 or 2007, the market is overvalued.

In Figure 5.13 we use a price/sales ratio that includes total sales from S&P 500 companies. Yet the average stock may be relatively overvalued more than the large caps that dominate the S&P 500. I say this because when one looks at the median price/sales ratio for the 500 stocks in the



The normal valuation line is calculated from six independent valuation lines based on: Dividends, Earnings, Cash Flow, Sales, CPI-adjusted P/E and Trend. Each month represents the median of these six measures.

Source: *Ned Davis Research, Inc., S&P Dow Jones Indices, Standard & Poor's*

	S&P 500 Average % Gain Years Later				
	1/2	1	2	3	5
Above 20.0	-0.22	-3.56	-1.57	6.84	-0.30
Below -20.0	14.03	19.35	30.55	47.26	65.32
Market	3.88	7.98	16.02	23.62	39.80

FIGURE 5.13 *TOP*, S&P 500 INDEX VERSUS "NORMAL" VALUATION; *BOTTOM*, S&P 500 INDEX, PERCENTAGE OVER- AND UNDERVALUED

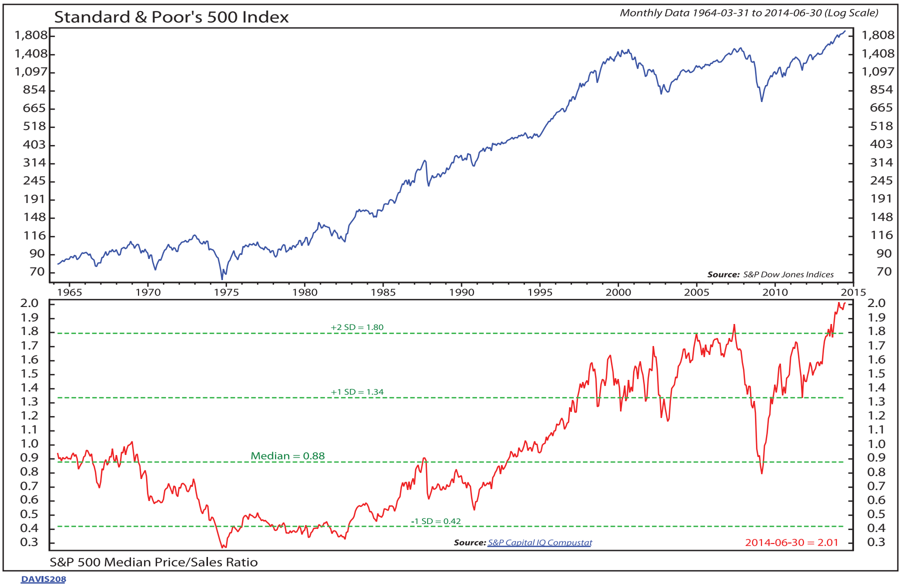


FIGURE 5.14 ***TOP*, S&P 500 INDEX; *BOTTOM*, S&P 500 MEDIAN PRICE/SALES RATIO**

S&P 500, the ratio is now almost as high as it has *ever* been, as shown in the bottom clip of Figure 5.14.

Ned Davis Research has its own database of institutional grade stocks. I like to calculate median P/E ratios, based upon trailing earnings, as shown on Figure 5.15. The median is the point at which half are higher and half are lower. In particular, I am struck that the median of some 1,440 small-cap common stocks is 34.3 percent overvalued, based upon norms going back to 1980.

Another sign that the average stock is more overvalued than the major averages is shown in Figure 5.16. This shows the three- to five-year appreciation potential for some 1,700 stocks as calculated by Value Line. Recent readings showed less appreciation potential than seen at the 2000 and 2007 peaks.

Earnings are very volatile and cyclical and thus it is hard to know what normalized earnings are. Stock valuations are supposed to be based upon a very long-term stream of earnings. Figure 5.17 tries to normalize earnings, based upon a linear regression going back to 1927. This, too, indicates that stocks are overvalued.

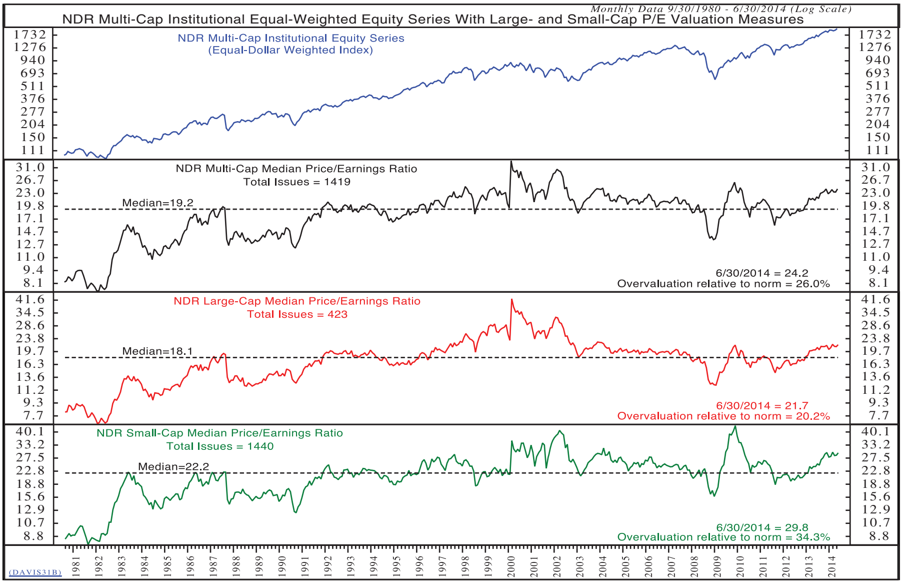


FIGURE 5.15 **NDR MULTI-CAP INSTITUTIONAL EQUAL-WEIGHTED EQUITY SERIES WITH LARGE AND SMALL CAP P/E VALUATION METHODS**

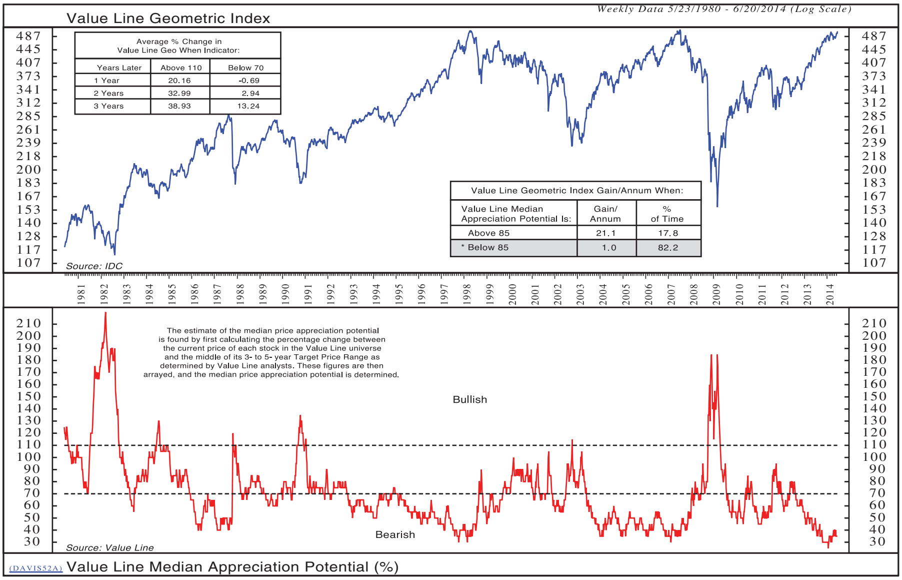
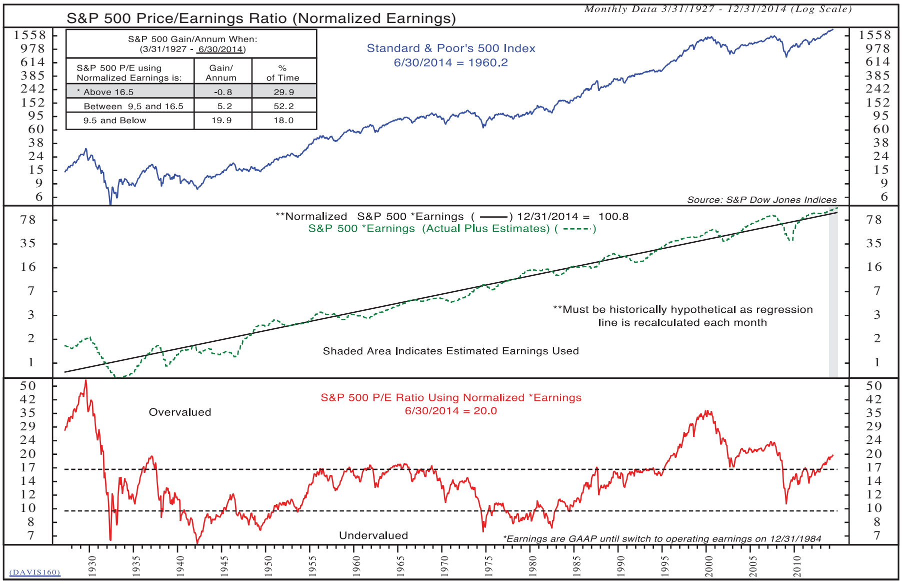


FIGURE 5.16 ***TOP*, VALUE LINE GEOMETRIC INDEX; *BOTTOM*, VALUE LINE MEDIAN APPRECIATION POTENTIAL (PERCENTAGE)**



S&P 500 Gain/Annum When:
(3/31/1927 - 6/30/2014)

S&P 500 P/E using Normalized Earnings is:	Gain/ Annum	% of Time
* Above 16.5	-0.8	29.9
Between 9.5 and 16.5	5.2	52.2
9.5 and Below	19.9	18.0

Source: S&P Dow Jones Indices

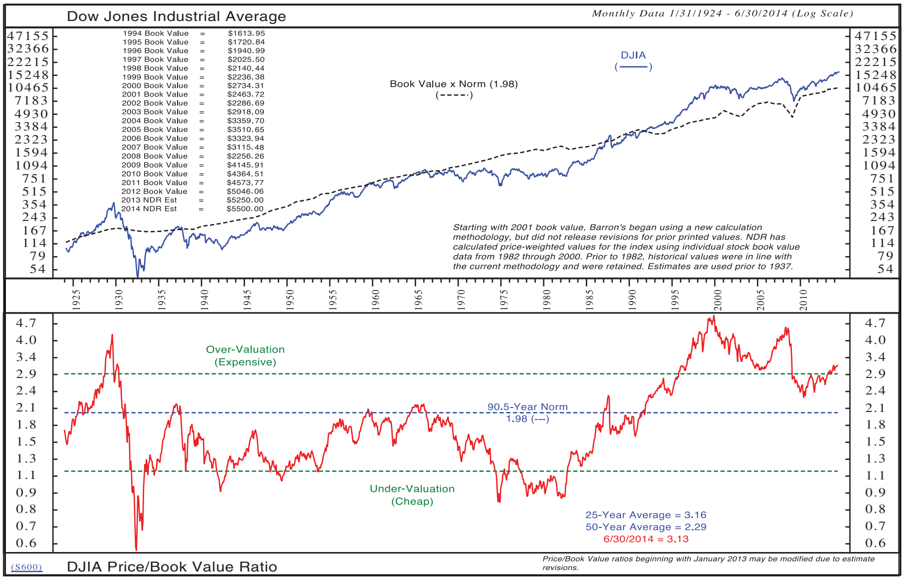
*Earnings are GAAP until switch to operating earnings on 12/31/1984

FIGURE 5.17 **S&P 500 PRICE/EARNINGS RATIO (NORMALIZED EARNINGS)**

Figure 5.18 has also recently shown high valuations in the DJIA price/book value ratio.

Two other valuation indicators are shown next. Figure 5.19 shows price/cash flow using NIPA (national income and product accounts) profits for nonfinancial corporations, and Figure 5.20 tracks market value, relative to net worth (Tobin's Q). In both cases, the market suggests high risks. Markets can always get more overvalued, overbought, and over-believed, but as risk managers, these indicators tell us to be alert and prepared to move should financial conditions tighten and/or the trend of stock prices weakens.

Until around 1996 my favorite valuation indicator was the S&P 500 price/dividends ratio, shown in Figure 5.21. But then the indicator went "off the charts" in the late 1990s. I believed that was a sign of a bubble, but I also realized that many companies had switched from paying dividends to buying back shares. So in the upper left of the chart I started estimating "proper" dividends, based upon the long-term norm of a 50 percent payout ratio. (The percentage of earnings that are distributed to shareholders as dividends.) At 50 percent, I estimate dividends would total $57. But even

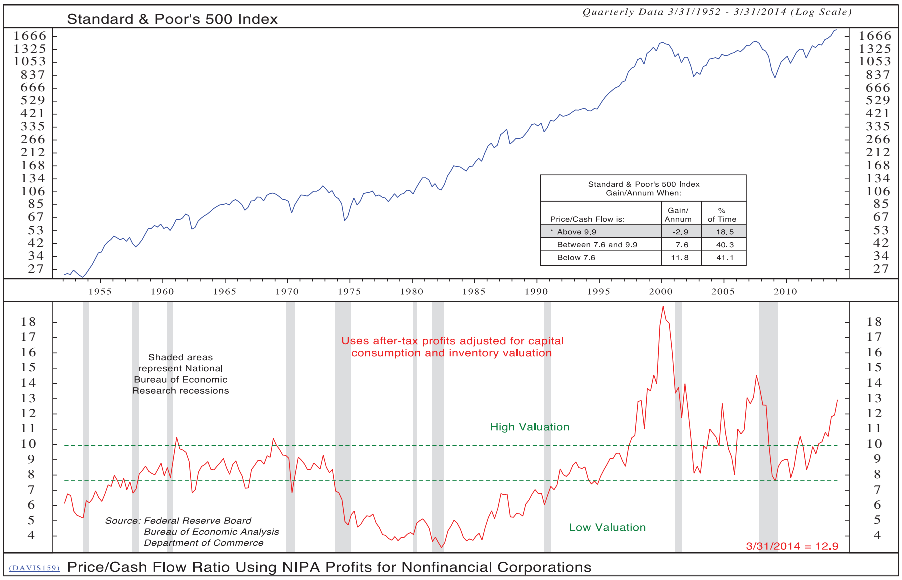


1994 Book Value = $1613.95
1995 Book Value = $1720.84
1996 Book Value = $1940.99
1997 Book Value = $2025.50
1998 Book Value = $2140.44
1999 Book Value = $2236.38
2000 Book Value = $2734.31
2001 Book Value = $2463.72
2002 Book Value = $2286.69
2003 Book Value = $2918.09
2004 Book Value = $3359.70
2005 Book Value = $3510.65
2006 Book Value = $3323.94
2007 Book Value = $3115.48
2008 Book Value = $2256.26
2009 Book Value = $4145.91
2010 Book Value = $4364.51
2011 Book Value = $4573.77
2012 Book Value = $5046.06
2013 NDR Est = $5250.00
2014 NDR Est = $5500.00

Starting with 2001 book value, Barron's began using a new calculation methodology, but did not release revisions for prior printed values. NDR has calculated price-weighted values for the index using individual stock book value data from 1982 through 2000. Prior to 1982, historical values were in line with the current methodology and were retained. Estimates are used prior to 1937.

Price/Book Value ratios beginning with January 2013 may be modified due to estimate revisions.

FIGURE 5.18 ***TOP*, DJIA; *BOTTOM*, DJIA PRICE/BOOK VALUE RATIO**

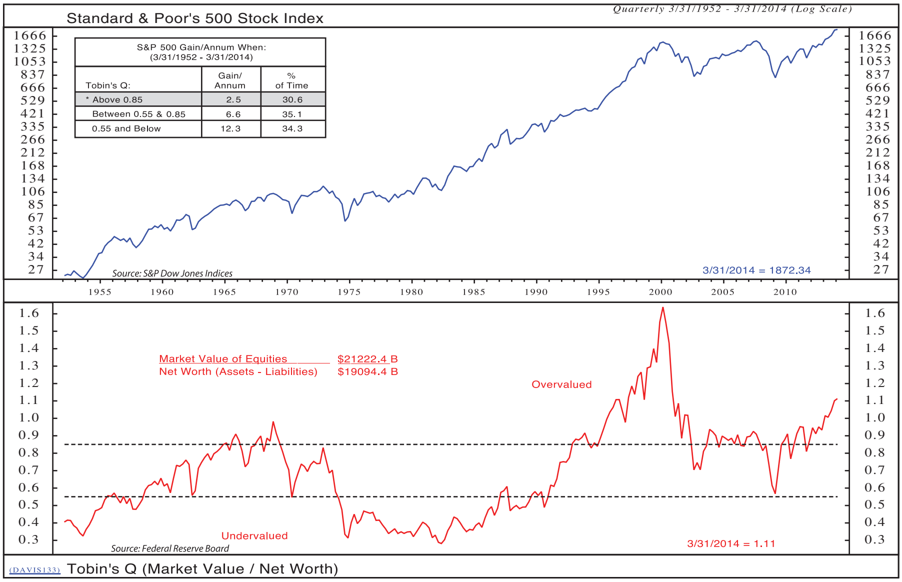


Standard & Poor's 500 Index
Gain/Annum When:

Price/Cash Flow is:	Gain/ Annum	% of Time
* Above 9.9	-2.9	18.5
Between 7.6 and 9.9	7.6	40.3
Below 7.6	11.8	41.1

Source: *Federal Reserve Board*
Bureau of Economic Analysis
Department of Commerce

FIGURE 5.19 ***TOP*, S&P 500 INDEX; *BOTTOM*, S&P 500 PRICE/CASH FLOW RATIO USING NIPA PROFITS FOR NONFINANCIAL CORPORATIONS**



S&P 500 Gain/Annum When:
(3/31/1952 - 3/31/2014)

Tobin's Q:	Gain/ Annum	% of Time
* Above 0.85	2.5	30.6
Between 0.55 & 0.85	6.6	35.1
0.55 and Below	12.3	34.3

FIGURE 5.20 ***TOP*, S&P 500 STOCK INDEX; *BOTTOM*, TOBIN'S Q (MARKET VALUE/NET WORTH)**

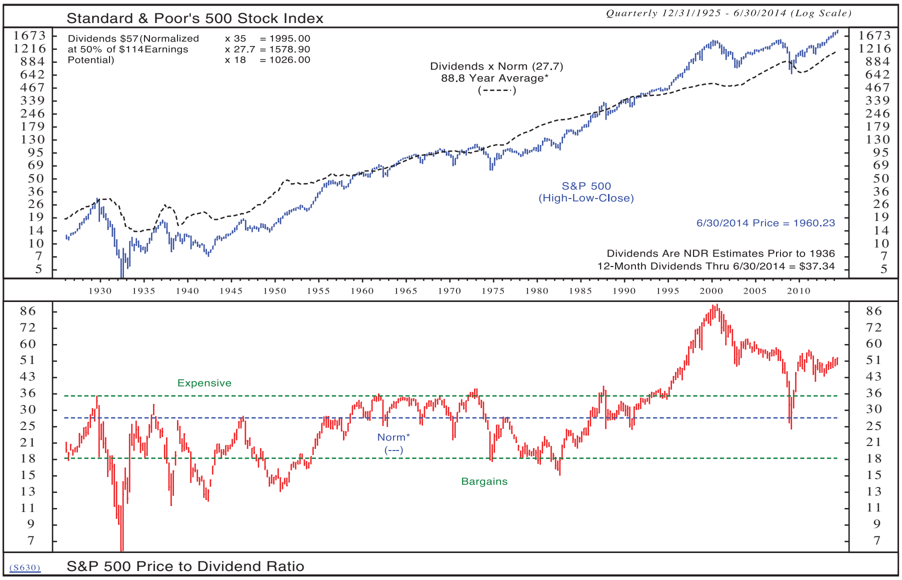
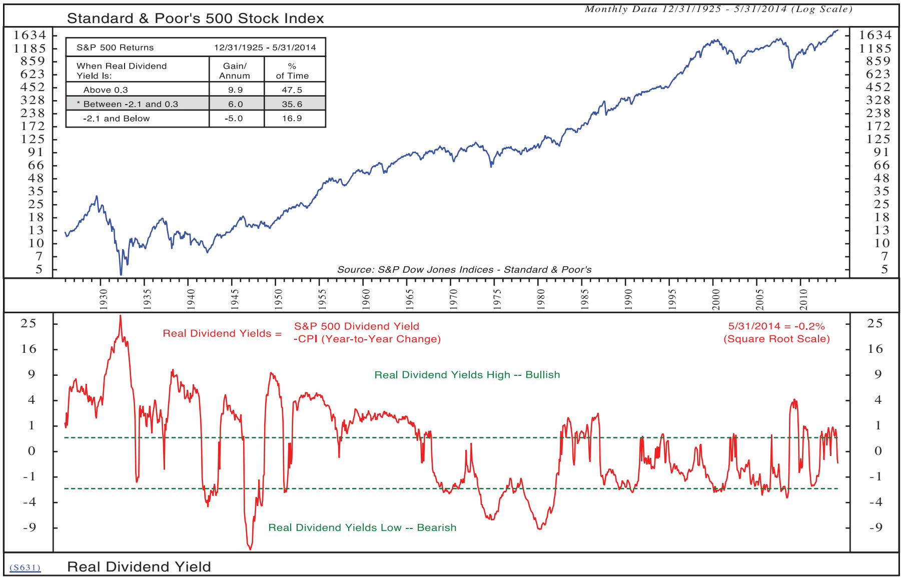


FIGURE 5.21 ***TOP*, S&P 500 INDEX; *BOTTOM*, S&P 500 PRICE/DIVIDEND RATIO**



S&P 500 Returns	12/31/1925 - 5/31/2014	
When Real Dividend Yield Is:	Gain/ Annum	% of Time
Above 0.3	9.9	47.5
* Between -2.1 and 0.3	6.0	35.6
-2.1 and Below	-5.0	16.9

FIGURE 5.22 ***TOP*, S&P 500 INDEX; *BOTTOM*, REAL DIVIDEND YIELD**

if they were at that level, that would still project fair value at 1579 on the S&P 500, well below where it is now.

Before leaving valuations, to present a more balanced argument, I want to show where I could be wrong. While stocks are, in my opinion, overvalued based upon absolute values, when one compares them to very low inflation or interest rates the values look much better, as shown in Figure 5.22.

TREND INDICATORS TO PLAN FOR A POTENTIAL PULLBACK—FOLLOW THE LEADERS

NDR's chief global investment strategist, Tim Hayes (who I think made one of the great calls in a *Special Report* in late 2012 advising clients to shift allocation out of bonds and into stocks), is quoted in a November 11, 2013, *Barron's* article called "Planning for a Pullback." The article says:

> . . . Hayes . . . believes that investors should embrace potential disappointment, pointing to the bull market that started in 1982. Aside from a

> brief hiccup in 1984, it ran nearly uninterrupted for five years—gaining 176 percent in the process—until it experienced a day in 1987 so bad it was given a name all of its own. On Black Monday, the S&P 500 dropped more than 20 percent.
>
> The setup looks quite similar today, Hayes says, although he quickly advises that he's not predicting another Black Monday. The S&P 500 is up 162 percent since it bottomed in March 2009, with a brief interruption in 2011. Hayes wouldn't be surprised to see the benchmark fall as much as 20 percent at some point in 2014. Yet, just as Black Monday refreshed the market for another run, such a loss could do the same today. "What happened in 1987 was about excessive speculation," Hayes says. "That's something to think about next year."

I've decided to stick with the theme of planning for a pullback and feature some of the indicators I would watch to tell us if a 20 percent pullback is coming or already under way.

I am mainly watching 10 indicators that usually peak in advance of an NDR-defined bull market peak. I'm watching normal lead times, but I'd also like to see some significant deterioration in the indicators. Based upon the average lead time a bear market is overdue. This is why I started a series of reports in late 2013 on preparing for a big correction. This chapter is a review of those reports. As the teacher told us in kindergarten, we should closely follow the leader.

Along with Table 5.1, we made a model of the 10 indicators using some simple trend-following techniques (see Figure 5.23). Thus, while many indicators have peaked, our model does not yet show enough significant deterioration to trigger a sell signal.

One of the indicators I am watching—weekly new highs as a percentage of total issues traded on the NYSE—is shown on Figure 5.24. In the bull market that started in 2011, it peaked on May 10, 2013, at 28.7 percent. As can be seen on the table, the median lead time for this indicator to a market peak is 182 days, meaning we recently passed the average time for a market peak.

Another indicator I am carefully watching to try to spot a peak in the market is the NDR Volume Demand Index (Figure 5.25). This one peaked on May 21, 2013, but it has had a 241-day lead time, on average, for the past eight bull-market peaks (see Table 5.1). That means a bull market peak is overdue. However, as of this writing, demand is greater than supply.

TABLE 5.1 SUMMARY OF LEAD TIMES FOR VARIOUS INDICATORS (MARKET DAYS)

Summary of Lead Times for Various Indicators (Market Days)

Indicator	Total Bull Markets	Median Lead Time (Mkt Days)	Date of Last Peak	Days since Last Peak	Remaining Days
S&P Utilities RS	12	324	10/3/2011	689	-366
S&P Financials RS	12	216	7/22/2013	238	-22
NDR Volume Demand	8	241	5/21/2013	280	-39
NYSE Weekly % New Highs	15	182	5/10/2013	285	-103
Big Mo Multi-Cap	9	277	9/14/2012	447	-170
Daily A/D Line	9	108	7/1/2014	0	108
Moody BAA Yields (Min)	15	136	11/9/2012	409	-273
DAVIS187	9	291	12/6/2011	644	-353
Co Lag	20	97	2/29/2012	587	-490
Bulls minus Bears	15	148	12/31/2013	125	23

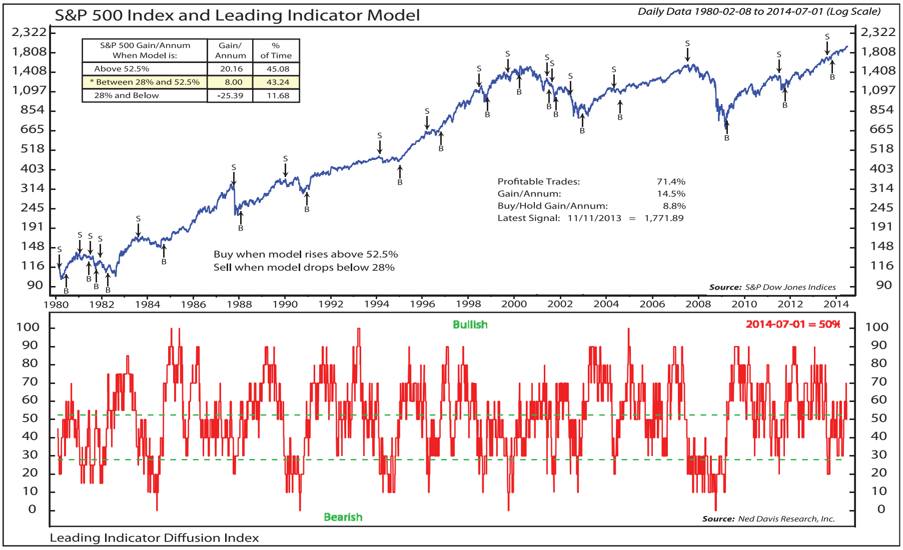
Lead Time Average = 202.0 days, Median = 199.0 days
Days Left Average = -168.5, Median = -136.5

Ned Davis Research Group *7/1/2014 T_NDH14_01.2*

Next, I always watch Big Mo Tape (Figure 5.26). It is also a leading indicator of a top, and it peaked on September 14, 2012, which means we are already past the time when a market peak was likely. But over the past nine bulls, at the final high in the market, Big Mo Tape was down to just a median of 63.3 percent bullish, so if we see deterioration to near that level, it would be a clearer warning. As of this writing, the trend evidence leans bullish.

MORE LEADING INDICATORS OF MARKET PEAKS

There are three other leading indicators that I want to feature. Two of these measures tell me that we should begin to plan for a major (around 20 percent) pullback in stock prices.



Please see important disclaimer at the beginning of the book.

FIGURE 5.23

***TOP*, S&P 500 INDEX WITH BUY/SELL SIGNALS; *BOTTOM*, LEADING INDICATOR DIFFUSION INDEX**

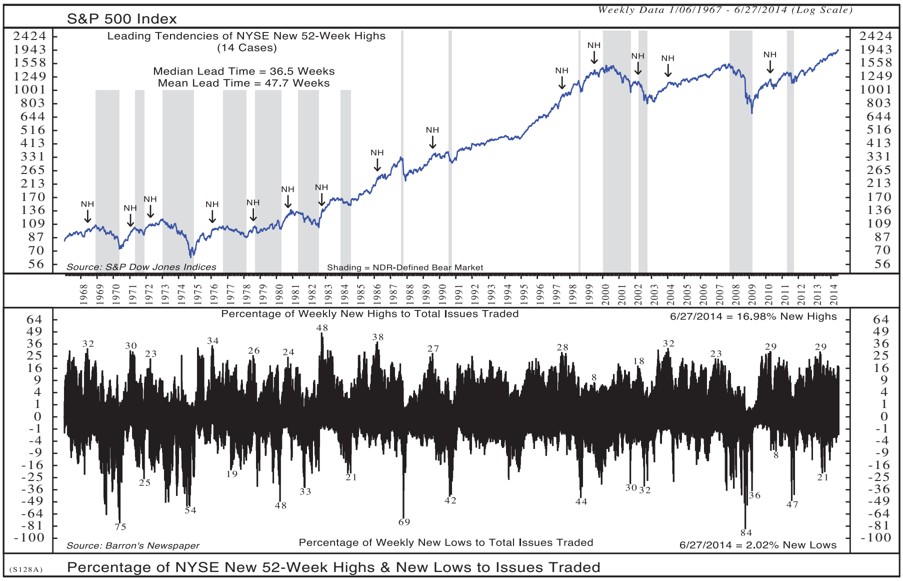
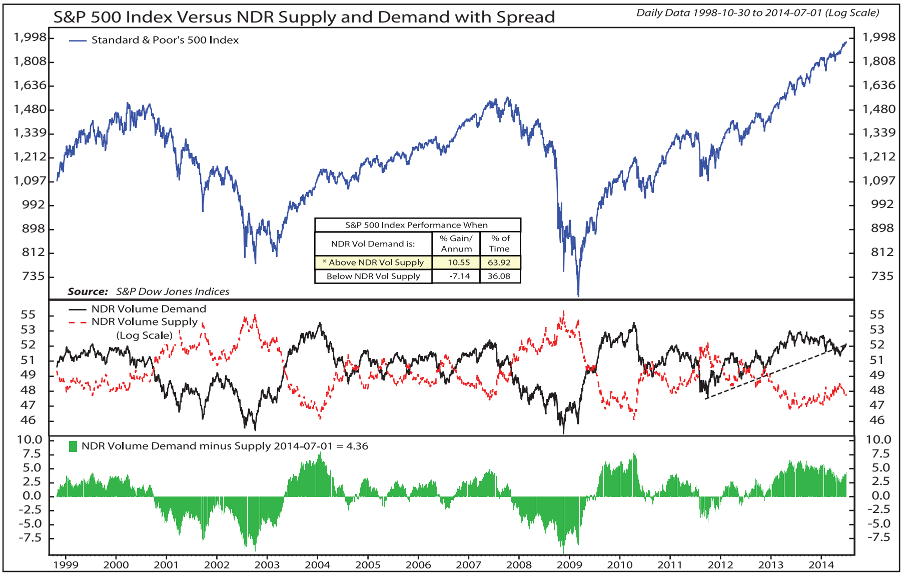


FIGURE 5.24

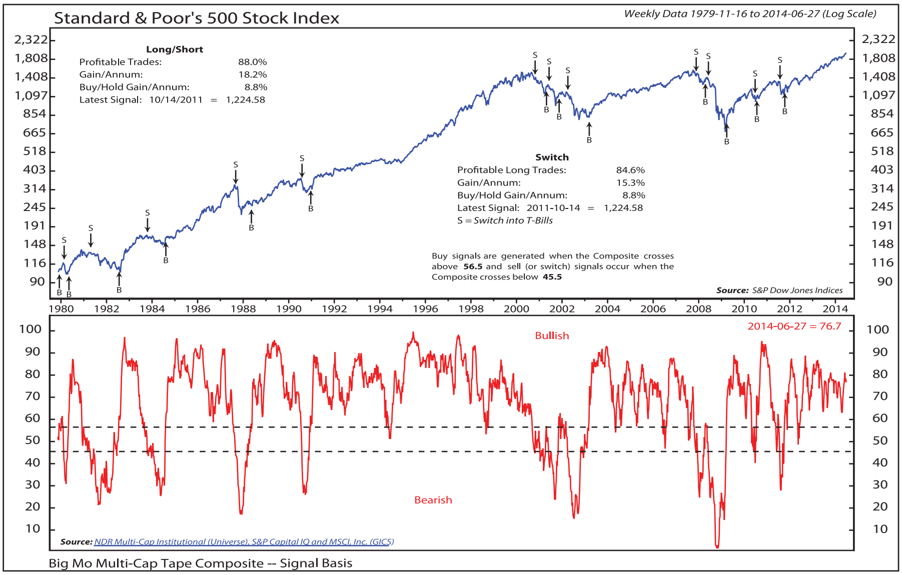
***TOP*, S&P 500 INDEX WITH NEW 52-WEEK HIGHS; *BOTTOM*, PERCENTAGE OF NYSE NEW 52-WEEK HIGHS & NEW LOWS TO ISSUES TRADED**



S&P 500 Index Performance When		
NDR Vol Demand is:	% Gain/ Annum	% of Time
* Above NDR Vol Supply	10.55	63.92
Below NDR Vol Supply	-7.14	36.08

DAVIS125B

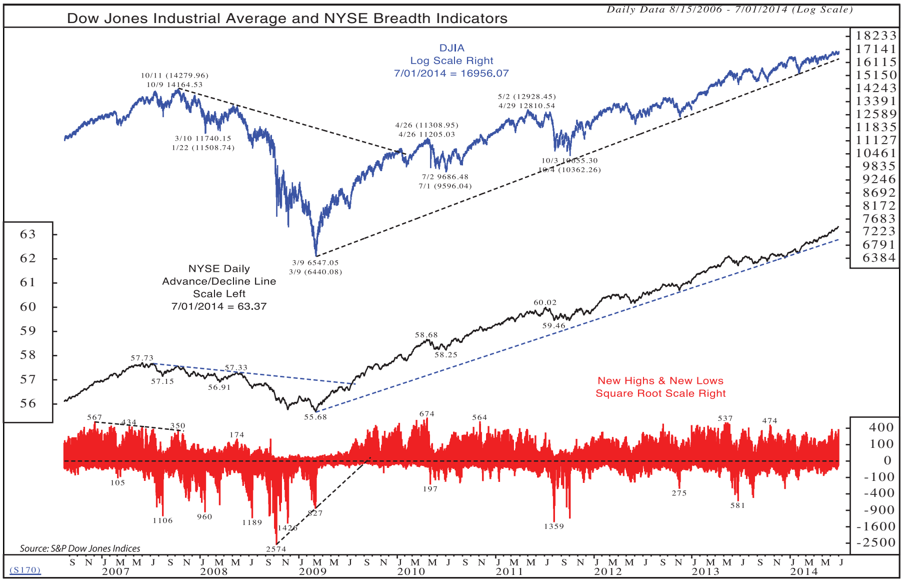
FIGURE 5.25 **S&P 500 INDEX VERSUS VOLUME SUPPLY AND DEMAND WITH SPREAD**



DAVIS250A

Please see important disclaimer at the beginning of the book.

FIGURE 5.26 ***TOP*, S&P 500 INDEX WITH BUY/SELL SIGNALS; *BOTTOM*, BIG MO MULTI-CAP TAPE COMPOSITE (SIGNAL BASIS)**



Source: S&P Dow Jones Indices

FIGURE 5.27 DOW JONES INDUSTRIAL AVERAGE AND NYSE BREADTH INDICATORS

One of the leading indicators arguing that we have not yet seen a market peak is the NYSE Daily Advance/Decline Line, shown on the chart in Figure 5.27. It shows the number of Big Board stocks that are rising and the number that are falling. When gainers consistently outnumber decliners, that's a positive sign for the market. This indicator has, on average, led bull-market peaks by almost five months. At Ned Davis Research, we also like to watch broad-based A/D lines, which include all the common stocks from all three exchanges. They confirm the new high in the NYSE A/D Line. But as a leading indicator, the NYSE may be better than just common stocks, as it is very interest rate-sensitive and includes a lot of preferred stock and bond funds. Interest rates tend to turn up well before stocks peak (see, for example, the Moody's Baa yields on Table 5.1). I would need to see a clear-cut break of the uptrend on the A/D line since 2009 and more deterioration to conclude that we've seen a peak.

Figure 5.28 shows the S&P 500 with NDR-defined bear markets shaded. It also shows the relative-strength lines (for example, Financials relative to

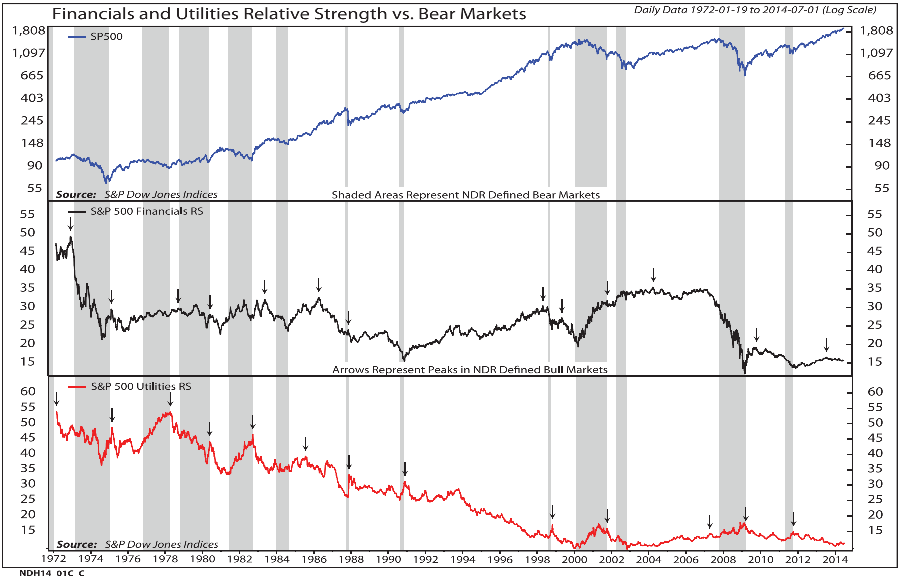


FIGURE 5.28 FINANCIAL AND UTILITIES RELATIVE STRENGTH VERSUS BEAR MARKETS

the S&P 500) for Utilities and Financials. For the 12 bull-market peaks shown, relative strength of Utilities and Financials led each and every peak.

I am particularly interested in Financials. They have been stronger than usual for a market peak this cycle. Figures 5.29 and 5.30 will tell me if and when Financials give a bear market warning. I am watching Figure 5.29 on financial stocks, and I have circled some indicator readings associated with key market peaks. This is something to carefully watch, if it happens. Figure 5.30 shows the very sensitive AMEX Securities Broker/Dealer Index.

In conclusion, trend evidence remains bullish, but leading trend indicators tell us to prepare for a major (20 percent or so) pullback later.

FOUR-YEAR PRESIDENTIAL CYCLE RISKS

While trend evidence is currently still bullish, I have had some good luck looking at the S&P 500 Index over the four-year presidential cycle (Figure 5.31). As demonstrated, one often sees a major correction in the middle

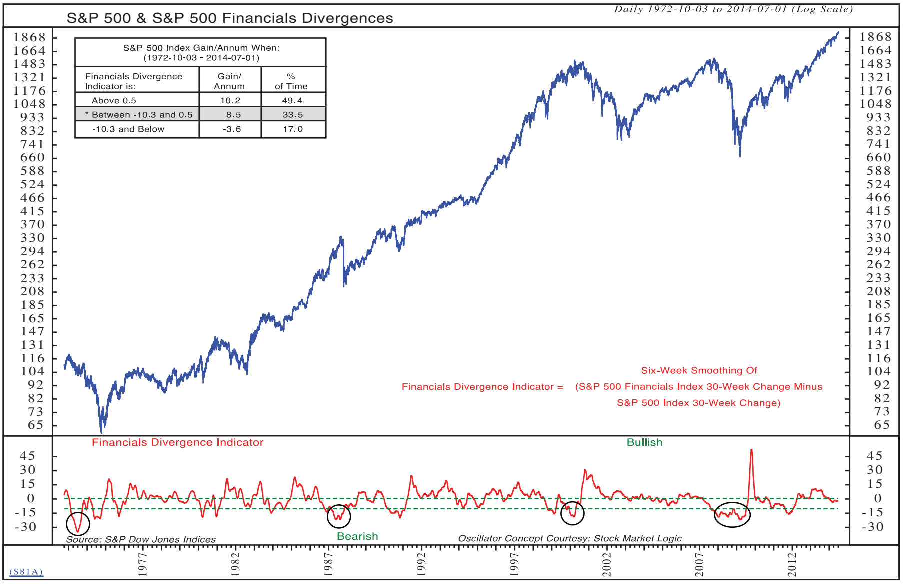


FIGURE 5.29 S&P 500 AND S&P 500 FINANCIALS DIVERGENCES

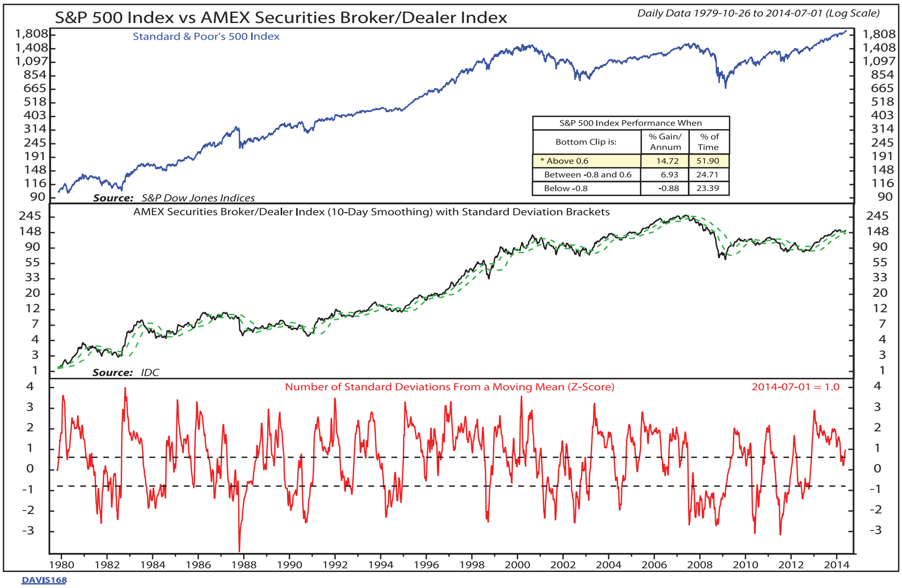


FIGURE 5.30 S&P 500 INDEX VERSUS AMEX SECURITIES BROKER/DEALER INDEX

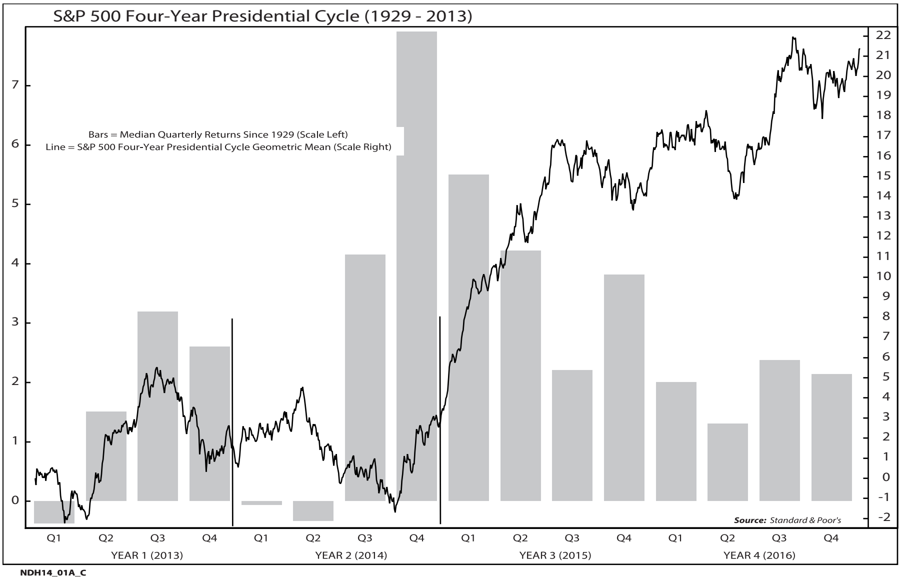


FIGURE 5.31 **S&P 500 INDEX OVER THE FOUR-YEAR PRESIDENTIAL CYCLE (1929–2013)**

of year two of the cycle, which equates to 2014. These corrections often lead to major buying opportunities.

In conclusion, trend evidence remains bullish, but the four-year presidential cycle warns us to prepare for a 20 percent correction this year. See Table 5.2 for more election-cycle information.

Table 5.2 shows:

1. The low for the midterm four-year cycle.
2. The worst declines in a 12-month period leading to midterm election year lows. For example, the S&P 500 fell 16 percent between April 23, 2010 and the July 2, 2010 low. The average loss since 1934 is 21 percent.
3. The gains to the next year's high.
4. And the following year's high.

From the midterm low to the election-year high, the S&P 500 has rallied 60 percent on average! So if we indeed get a big correction this year, it may set up another great buying opportunity.

TABLE 5.2 S&P 500 PERFORMANCE SINCE 1934

S&P 500 PERFORMANCE SINCE 1934

		1		2			3			4
Prior 12-Month High	**S&P Value**	**Mid-Term Low Date**	**S&P Value**	**% Loss To Mid-Term Low**	**Pre Elect-Yr High Date**	**S&P Value**	**% Gain From Mid-Term Low**	**Elect-Year High Date**	**S&P Value**	**% Gain From Mid-Term Low**
2/6/1934	11.82	7/26/1934	8.36	-29.27	11/19/1935	13.46	61.00	11/9/1936	17.69	111.60
3/31/1937	17.92	3/31/1938	8.50	-52.57	1/4/1939	13.23	55.65	1/3/1940	12.77	50.24
7/28/1941	10.47	4/28/1942	7.47	-28.65	7/14/1943	12.64	69.21	12/16/1944	13.29	77.91
5/29/1946	19.25	10/9/1946	14.12	-26.65	2/8/1947	16.20	14.73	6/15/1948	17.06	20.82
1/7/1950	17.09	1/14/1950	16.65	-2.57	10/15/1951	23.85	43.24	12/30/1952	26.59	59.70
2/3/1953	26.54	1/11/1954	24.80	-6.56	11/14/1955	46.41	87.14	8/2/1956	49.74	100.56
7/15/1957	49.13	1/2/1958	40.33	-17.91	8/3/1959	60.71	50.53	1/5/1960	60.39	49.74
12/12/1961	72.64	6/26/1962	52.32	-27.97	12/31/1963	75.02	43.39	11/20/1964	86.28	64.91
2/9/1966	94.06	10/7/1966	73.20	-22.18	9/25/1967	97.59	33.32	11/29/1968	108.37	48.05
5/26/1969	104.36	5/26/1970	69.29	-33.60	4/28/1971	104.77	51.21	12/11/1972	119.12	71.92
10/12/1973	111.44	10/3/1974	62.28	-44.11	7/15/1975	95.61	53.52	9/21/1976	107.83	73.14
3/16/1977	102.17	3/6/1978	86.90	-14.95	10/5/1979	111.27	28.04	11/28/1980	140.52	61.70
8/13/1981	133.51	8/12/1982	102.42	-23.29	10/10/1983	172.65	68.57	11/6/1984	170.41	66.38
1/7/1986	213.80	1/22/1986	203.49	-4.82	8/25/1987	336.77	65.50	10/21/1988	283.66	39.40
7/16/1990	368.95	10/11/1990	295.46	-19.92	12/31/1991	417.09	41.17	12/18/1992	441.28	49.35
2/2/1994	482.00	4/4/1994	438.92	-8.94	12/13/1995	621.69	41.64	11/25/1996	757.03	72.48
12/5/1997	983.79	1/9/1998	927.69	-5.70	12/31/1999	1,469.25	58.38	3/24/2000	1,527.46	64.65
1/4/2002	1,172.51	10/9/2002	776.76	-33.75	12/31/2003	1,111.92	43.15	12/30/2004	1,213.55	56.23
5/5/2006	1,325.76	6/13/2006	1,223.69	-7.70	10/9/2007	1,565.15	27.90	1/2/2008	1,447.16	18.26
4/23/2010	1,217.28	7/2/2010	1,022.58	-15.99	4/29/2011	1,363.61	33.35	9/14/2012	1,465.77	43.34
Mean				-21.36			48.53			60.02
Median				-21.05			46.96			60.70

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MACRO BACKDROP: DEBT BUBBLE UPDATE

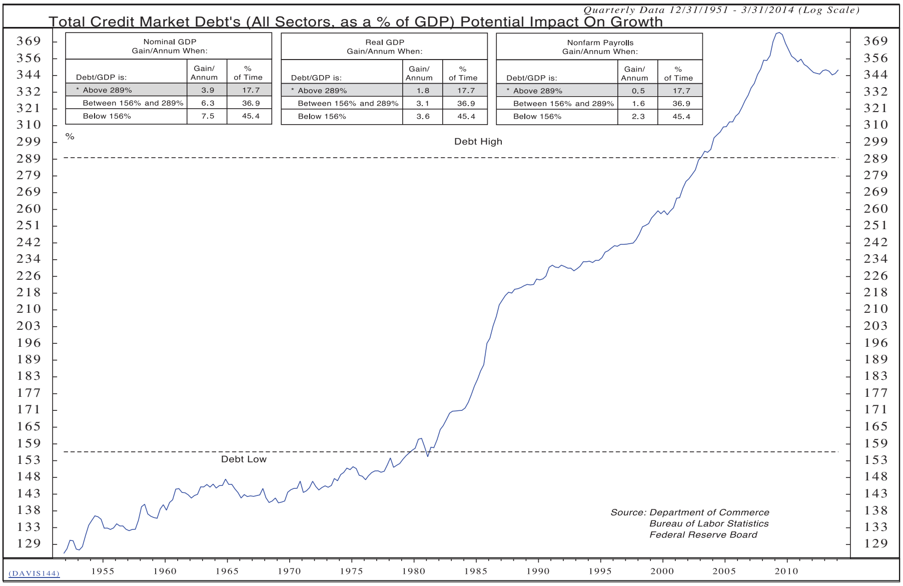
In the 2000 edition of *Being Right or Making Money* I featured a chapter on the Bubble of 2000. That turned out to be a timely warning. By 2009 many of the indicators I had featured in the Bubble of 2000 report had been corrected, but there is still a bearish secular residue related to debt that concerns me, and I also see risks for a major pullback in stock prices in 2014. While I will not act on these risks until indicators like the Fab Five (see Chapter 3) turn negative, I wanted to update the debt bubble information in this chapter and look at other risk factors for 2014.

My basic views on debt are these:

- It can be a positive if used for productive investment.
- But it is normally a short-term economic boost at the expense of future consumption, investment, and demand.

Thus, I find excessive debt can begin to weigh on potential growth rates. Figure 5.32 provides my main evidence for this belief. The rate of real GDP growth at high levels of debt has historically been about half the rate of growth at low debt levels.

As I pointed out in the 2000 edition of this book (when debt was far lower than it is now), not only is debt a four-letter word, but as it increases it produces less GDP growth, which indicates to me real economic stress. I noted, "Like addictive drugs, it is taking bigger and bigger doses of debt to produce the same 'high' feeling we used to get." Table 5.3 updates the second-edition table that backed up this observation.



Nominal GDP Gain/Annum When:		
Debt/GDP is:	Gain/ Annum	% of Time
* Above 289%	3.9	17.7
Between 156% and 289%	6.3	36.9
Below 156%	7.5	45.4

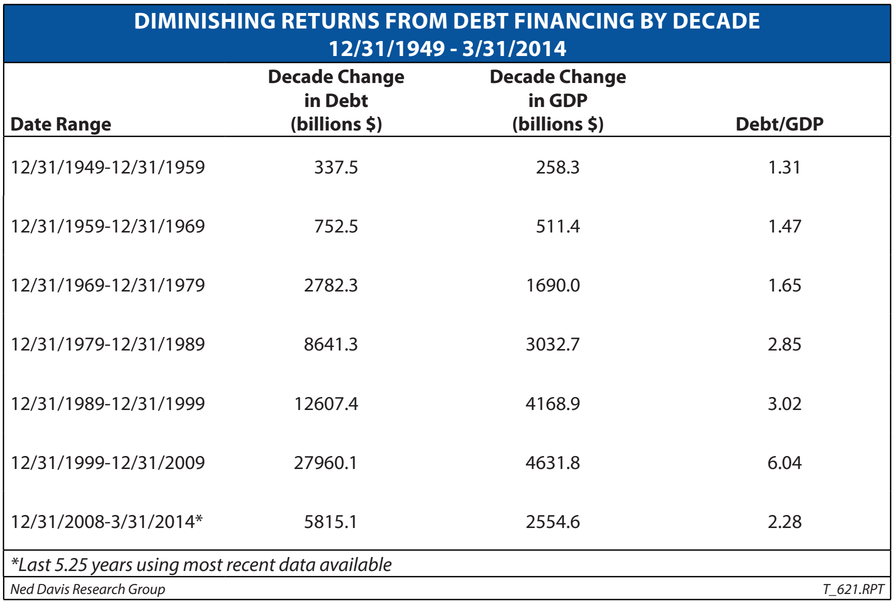
Real GDP Gain/Annum When:		
Debt/GDP is:	Gain/ Annum	% of Time
* Above 289%	1.8	17.7
Between 156% and 289%	3.1	36.9
Below 156%	3.6	45.4

Nonfarm Payrolls Gain/Annum When:		
Debt/GDP is:	Gain/ Annum	% of Time
* Above 289%	0.5	17.7
Between 156% and 289%	1.6	36.9
Below 156%	2.3	45.4

Source: Department of Commerce
Bureau of Labor Statistics
Federal Reserve Board

FIGURE 5.32 **POTENTIAL IMPACT ON GROWTH FROM TOTAL CREDIT MARKET DEBTS (ALL SECTORS, AS A PERCENTAGE OF GDP)**

TABLE 5.3 **DIMINISHING RETURNS FROM DEBT FINANCING BY DECADE (12/31/1949–3/31/2014)**



DIMINISHING RETURNS FROM DEBT FINANCING BY DECADE 12/31/1949 - 3/31/2014

Date Range	Decade Change in Debt (billions $)	Decade Change in GDP (billions $)	Debt/GDP
12/31/1949-12/31/1959	337.5	258.3	1.31
12/31/1959-12/31/1969	752.5	511.4	1.47
12/31/1969-12/31/1979	2782.3	1690.0	1.65
12/31/1979-12/31/1989	8641.3	3032.7	2.85
12/31/1989-12/31/1999	12607.4	4168.9	3.02
12/31/1999-12/31/2009	27960.1	4631.8	6.04
12/31/2008-3/31/2014*	5815.1	2554.6	2.28

**Last 5.25 years using most recent data available*

Ned Davis Research Group *T_621.RPT*

Sometimes it is hard to grasp the implications of debt, so I also like to look at the related data on saving. It is easier to understand how higher levels of saving can lead to increased demand. Saving is also closely related to, and can lead to, the investment I mentioned earlier. My studies on investment show that, like saving, it can lead to high rates of economic growth. The more money people have in savings, the more money there is to invest, and the better the economy performs. Saving and historical economic growth rates are shown on Figure 5.33. As can be seen, the ratio of debt to GDP shown in Figure 5.32 is well off its peak and the net national saving rate is greatly improved, but both remain in troublesome territory.

Figure 5.34 presents a picture of the key household balance sheet items relative to disposable personal income. Debt (liabilities) relative to disposable personal income is featured in the fourth clip. It has come down a lot but it is still high. The dollar value of both stocks and bonds is also high, relative to disposable personal income. To me this means that it would not take much of a rise in interest rates or financial tightening for stocks to go

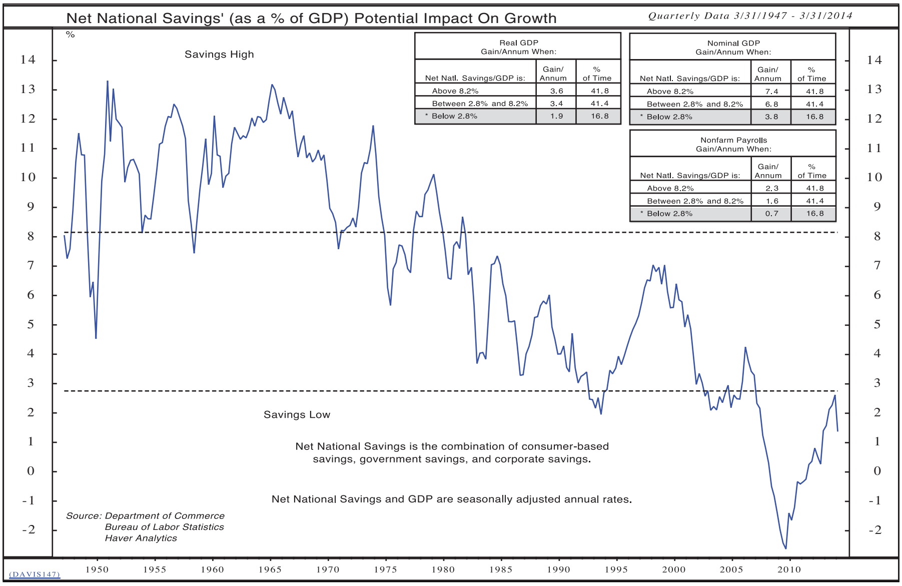


FIGURE 5.33 **POTENTIAL IMPACT ON GROWTH FROM NET NATIONAL SAVINGS (AS A PERCENTAGE OF GDP)**

into a bear market. When talking about potential "irrational exuberance" in late 1996, Alan Greenspan warned that equity prices and income can diverge for long periods but eventually stocks are anchored by income growth. Income is used for debt service, and it also provides the revenues and profits that support stocks in the long run.

Another broader picture of overall stock prices compared to overall gross domestic income is featured in Figure 5.35. Income provides the raw material for saving, investment, and consumption. A lot of people argue that in a more global economy, one should also consider global savings and income. But still, this chart suggests a lot of optimism, overvaluation, and low liquidity. This chart is both a valuation chart and a picture showing that income is not growing fast enough (probably due to too much debt and too little saving and investment) to support asset prices.

The improvement that can be seen in total debt relative to GDP or household debt relative to disposable personal income is encouraging, but unfortunately the very low interest rates that made the debt manageable have

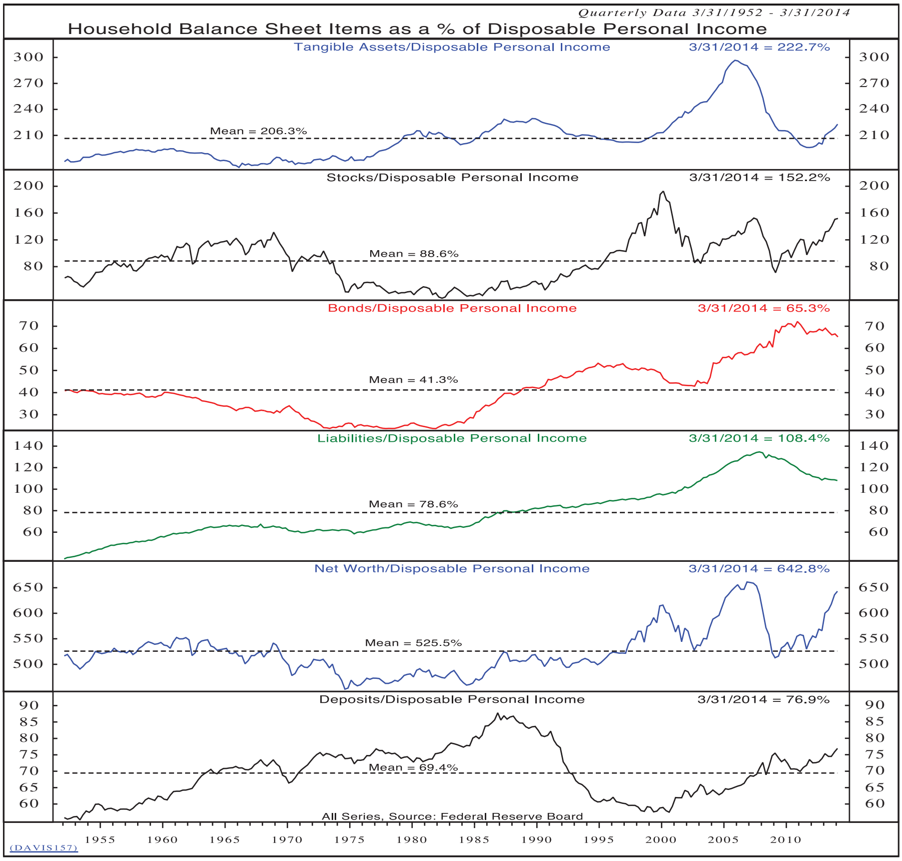


FIGURE 5.34 **HOUSEHOLD BALANCE SHEET ITEMS AS A PERCENTAGE OF DISPOSABLE PERSONAL INCOME**

led to a surge in both nonfinancial corporate debt, as seen in Figure 5.36, and government debt (including GSE—government-sponsored enterprise debt), in Figure 5.37. While corporations have a lot of cash on their balance sheets, overall credit-market debt is at a record $59.4 trillion, some 3.47 times the size of the economy. So except for a lot of mortgage debt that was written off, the rest looks a little like rearranging the deck chairs on the Titanic.

It is true that the stock market has performed very well since 2009, but the economy's performance would best be described as so-so, despite all

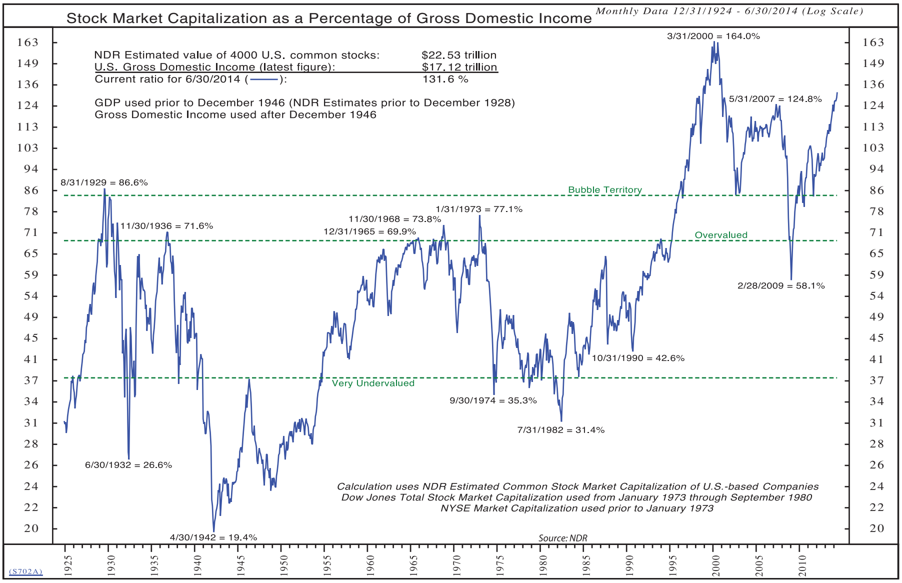


FIGURE 5.35 STOCK MARKET CAPITALIZATION AS A PERCENTAGE OF GROSS DOMESTIC INCOME

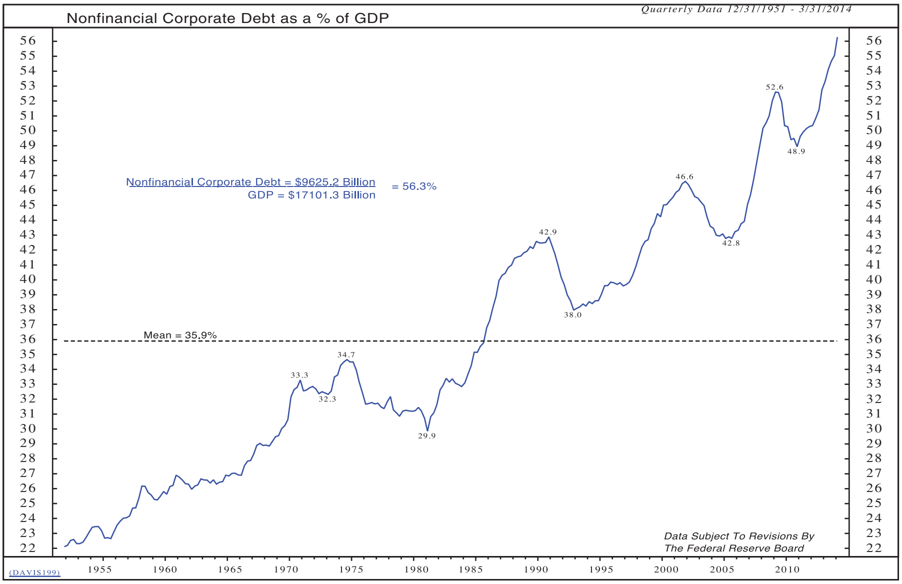
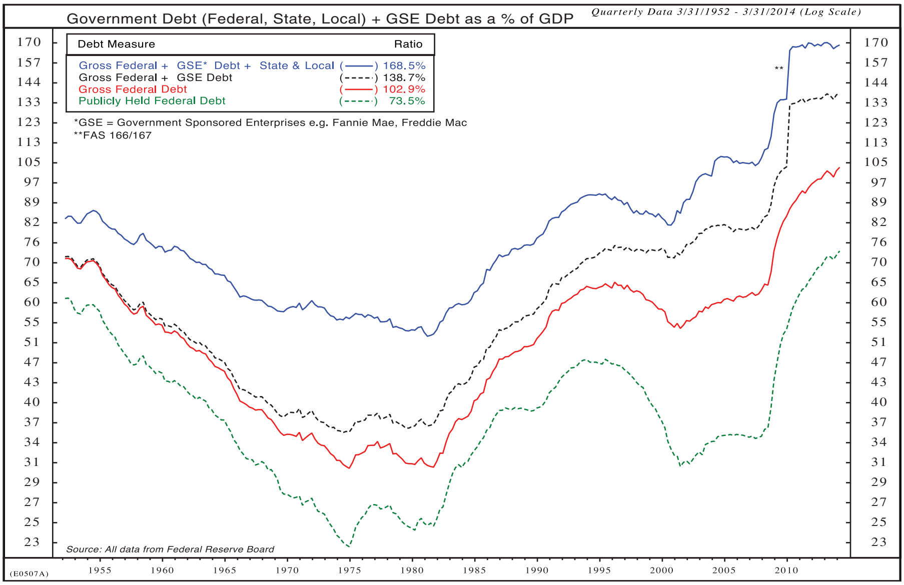


FIGURE 5.36 NONFINANCIAL CORPORATE DEBT AS A PERCENTAGE OF GDP



*GSE = Government Sponsored Enterprises e.g. Fannie Mae, Freddie Mac
**FAS 166/167

Source: All data from Federal Reserve Board

FIGURE 5.37 GOVERNMENT DEBT (FEDERAL, STATE, LOCAL) PLUS GSE DEBT AS A PERCENTAGE OF GDP

this corporate and government debt. My explanation for why the stock market has thrived is shown in Figure 5.38 and Figure 5.39. By driving short-term interest rates to zero and buying over $3 trillion in bonds, the Fed has made the current level of debt manageable and forced savers into riskier assets, such as stocks. The catch-22 is that any level of more normal growth or inflation (which we think could emerge in 2014), which would lead to normalized interest rates, could cause debt service to soar and put us back into very slow growth. In summary, we would need to see more saving and income and less debt to feel really good about the nation's balance sheet.

Last but not least, Figure 5.40, the final chart in this section on the residual debt bubble, does not feature debt, but rather derivatives. Derivatives can turn into high-risk debt when systemic problems erupt. Warren Buffett calls derivatives "financial weapons of mass destruction." Derivatives have contributed to nearly every one of the major financial crises of the past few decades—from the crash of 1987 to LTCM, Lehman Brothers, Bear Stearns, AIG, the Flash Crash, MF Global, the JPMorgan London Whale trade, and

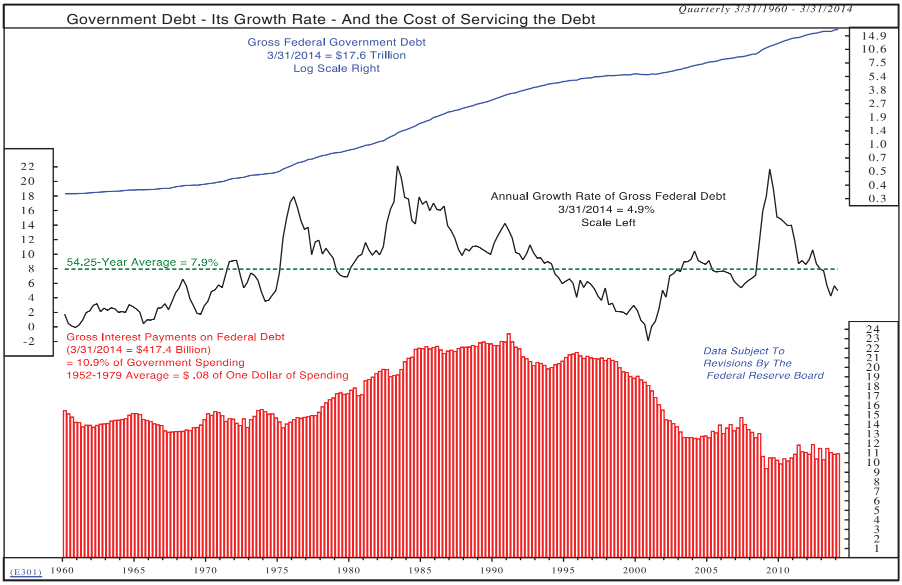
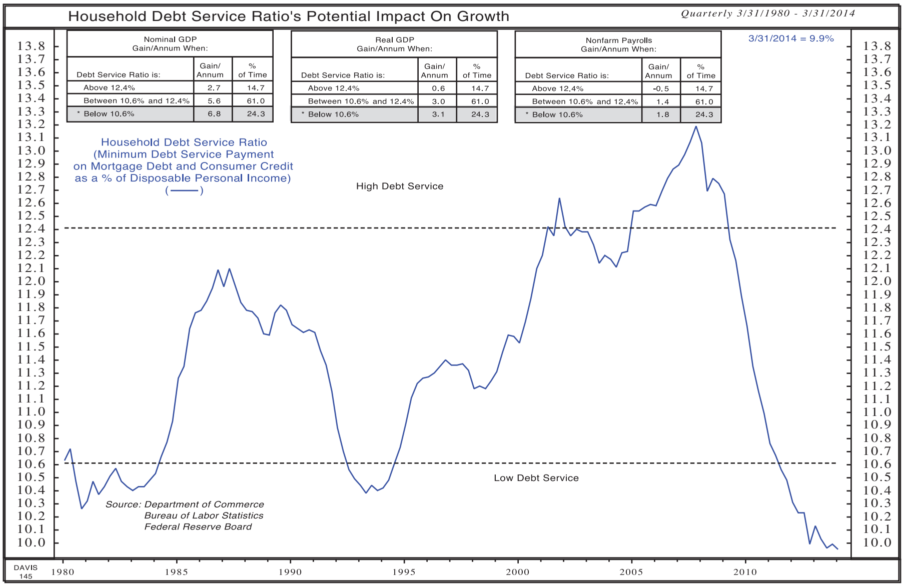


FIGURE 5.38 **GOVERNMENT DEBT: ITS GROWTH RATE AND THE COST OF SERVICING IT**



Nominal GDP Gain/Annum When:		
Debt Service Ratio is:	Gain/ Annum	% of Time
Above 12.4%	2.7	14.7
Between 10.6% and 12.4%	5.6	61.0
* Below 10.6%	6.8	24.3

Real GDP Gain/Annum When:		
Debt Service Ratio is:	Gain/ Annum	% of Time
Above 12.4%	0.6	14.7
Between 10.6% and 12.4%	3.0	61.0
* Below 10.6%	3.1	24.3

Nonfarm Payrolls Gain/Annum When:		
Debt Service Ratio is:	Gain/ Annum	% of Time
Above 12.4%	-0.5	14.7
Between 10.6% and 12.4%	1.4	61.0
* Below 10.6%	1.8	24.3

Source: Department of Commerce
Bureau of Labor Statistics
Federal Reserve Board

FIGURE 5.39 **POTENTIAL IMPACT ON GROWTH FROM HOUSEHOLD DEBT SERVICE RATIOS**

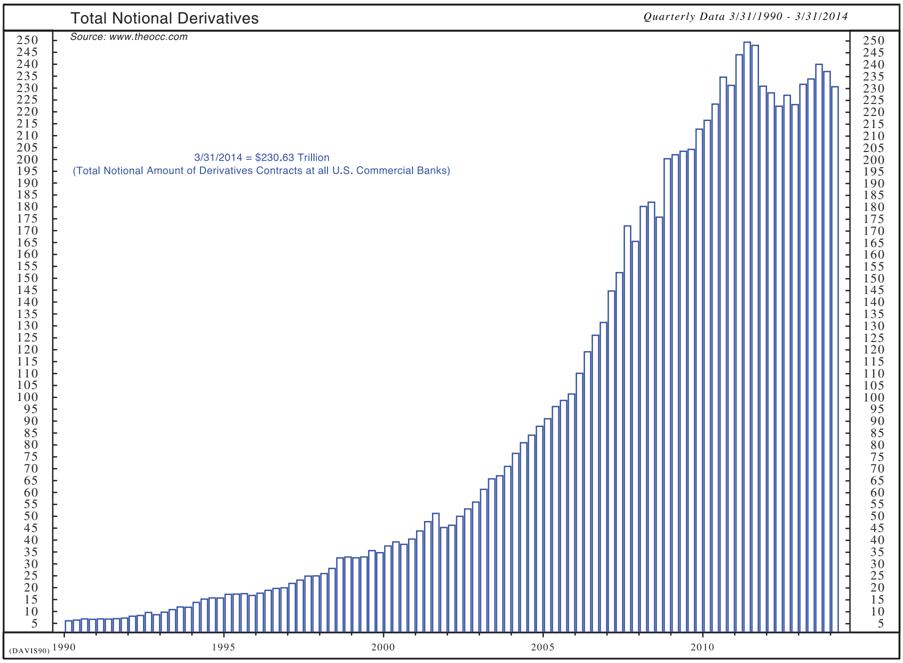


FIGURE 5.40 **TOTAL NOTIONAL DERIVATIVES**

even Greece's near insolvency. As with the rest of the debt bubble, there has been some improvement in the derivatives picture but there is still some dangerous residue.

Watching Fed Policy to Prepare for a Major Pullback in 2014

I want to detail the factors I am watching to see if there will be a major correction in stock prices in 2014. I will use the same supply/demand indicators that I discussed in my chapter on our philosophy: don't fight the Fed, don't fight the tape, and be wary of the crowd at extremes. Right now I want to focus on *don't fight the Fed*.

Historically, the macro indicators I've generally watched in preparation for a cyclical bear market reflect things that can force the Fed to tighten. A bear market can exist without help from Fed tightening, but generally those down markets are not as severe and don't last as long as bear markets accompanied by tightening.

For example, Table 5.4 shows bear markets since 1966 that were associated with a negative yield curve—in which short-term interest rates are higher than long-term rates—a classic sign of Fed tightening (see Figure 1.5 in Chapter 1). The average (Fed-aided) bear market produced an S&P 500 loss of 34.1 percent over 368 market days. We also identified 11 other bear markets since 1956 without a negative yield curve association. The median was a loss of 19.4 percent over 143 market days. The good news is that the Fed is unlikely to cause a negative yield curve (that generally leads to recessions) anytime soon. Nevertheless, thanks to the debt bubble, I still think we can have one of the more moderate bear markets in 2014, and so I want to examine the macro indicators that may help prepare us should conditions tighten modestly.

TABLE 5.4 **BEAR MARKET PERFORMANCE AROUND A NEGATIVE YIELD CURVE**

Bear Market Performance Around a Negative Yield Curve

Bears Around Negative Yield Curve*				All Other Bears			
Bear Start	**Bear End**	**% Loss S&P 500**	**Market Days**	**Bear Start**	**Bear End**	**% Loss S&P 500**	**Market Days**
1966-02-09	1966-10-07	-22.2	168	1956-04-06	1957-10-22	-20.2	390
1968-12-03	1970-05-26	-35.9	368	1960-01-05	1960-10-25	-13.4	206
1973-01-11	1974-12-06	-45.9	482	1961-12-13	1962-06-26	-27.9	135
1978-09-08	1980-04-21	-6.5	409	1971-04-28	1971-11-23	-13.9	147
1981-04-27	1982-08-12	-24.4	329	1976-09-21	1978-02-28	-19.3	363
2000-01-14	2001-09-21	-34.1	422	1983-11-29	1984-07-24	-12.0	165
2007-10-09	2009-03-09	-56.8	356	1987-08-25	1987-10-19	-33.2	39
				1990-07-16	1990-10-11	-19.9	63
				1998-07-17	1998-08-31	-19.3	32
				2002-03-19	2002-10-09	-33.6	143
				2011-04-29	2011-10-03	-19.4	109
	Mean	**-32.3**	**362**		**Mean**	**-21.1**	**163**
	Median	**-34.1**	**368**		**Median**	**-19.4**	**143**

*Bear markets are selected if start date occurs within +/- 9 months of a negative yield curve
Yield Curve calculated as 10-Year Treasury Bond Yield (proxy prior to 1962) minus 90-Day Treasury Bill Yield

Ned Davis Research Group *T_NDH14_01.3*

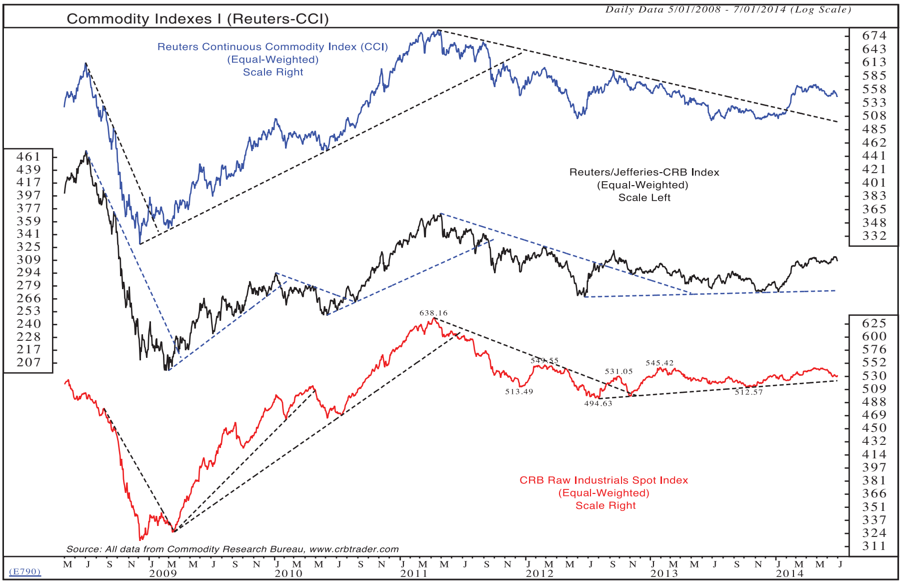
Watch Inflation

Two of the classic indicators that cause the Fed to tighten are a weak currency or a rise in inflation. The U.S. dollar has been very stable, and while there has been some inflation in the costs of services and shelter, goods prices have been in a downtrend since 2011, as reflected in the trend of commodity prices shown in Figure 5.41. Prices may be in the process of turning up, but it is too early to say for certain. Some of the recent upturn is likely weather-related.

Figure 5.41 seems to indicate more deflationary than inflationary pressures, and the conventional wisdom right now is that inflation isn't anywhere on the horizon. With the year-to-year changes in the producer and consumer price indices at 2.4 percent and 2.1 percent, respectively, both remain below the Fed's 2.5 percent warning level.

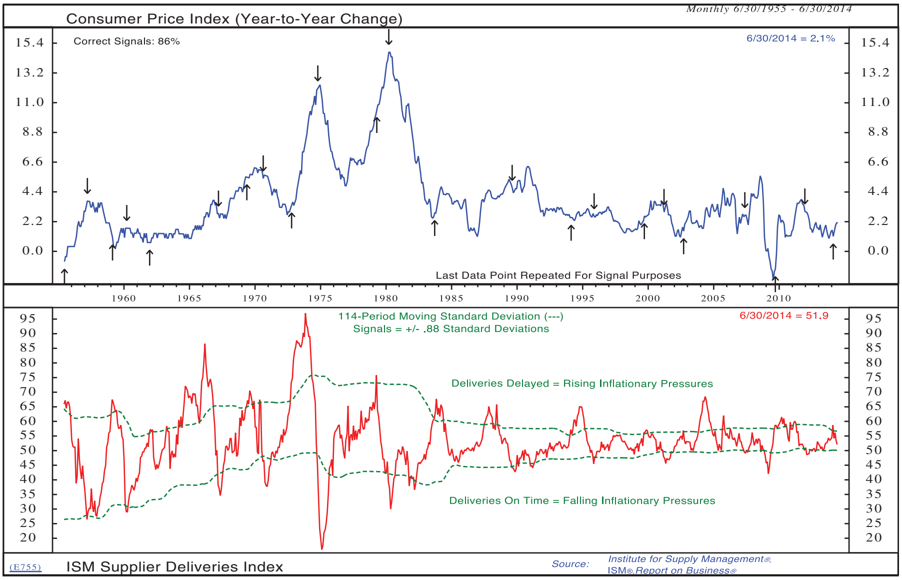
Figure 5.42 has also given an up signal for inflation, but this one could be weather-related as well.

Speaking of inflation, one of the factors helping keep it low is the renaissance of the U.S. energy industry. NDR's John LaForge provides much



Source: All data from Commodity Research Bureau, www.crbtrader.com

FIGURE 5.41 COMMODITY INDICES



Source: Institute for Supply Management®, ISM® Report on Business®

FIGURE 5.42 *TOP*, CONSUMER PRICE INDEX (YEAR-TO-YEAR CHANGE); *BOTTOM*, ISM SUPPLIER DELIVERIES INDEX

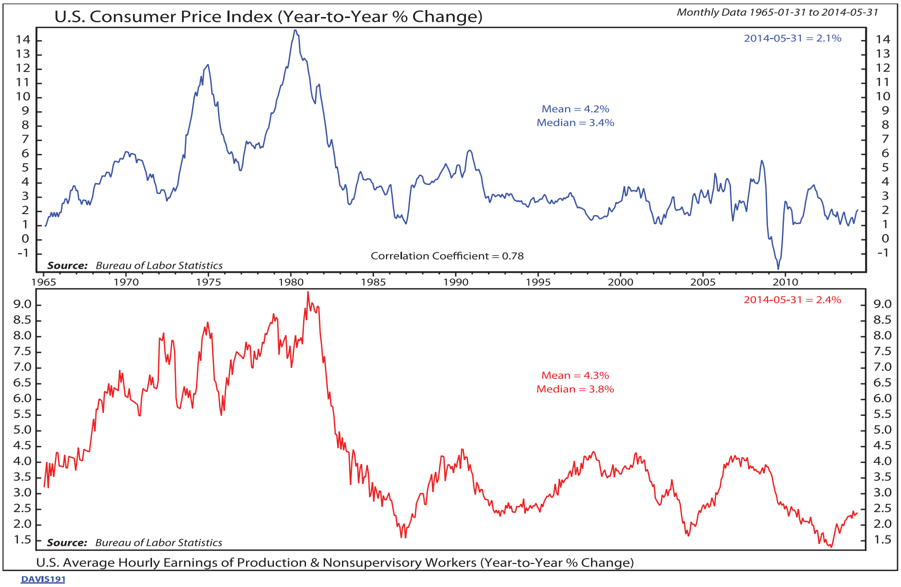
greater detail on this point in the last chapter of this book. Natural gas could be a secular game-changer.

I also want to watch wages: over the long run wage increases and CPI inflation have been closely related, as shown in Figure 5.43. Wage hikes above 2.5 percent would be worrisome because the Fed has said it doesn't want annual inflation above 2.5 percent.

One question is whether the tapering of Fed-provided money equals tightening or just less easing. I believe the real question is about available economic liquidity after real growth and inflation. Figure 5.44 argues that economic liquidity (13-month smoothing) has started to decline from its bullish zone. This should be watched.

Watch Financial Conditions and Interest Rates

Tight financial conditions can be triggered by things other than the Fed, as we saw when the dot-com bubble burst in 2000–2002 or when Lehman collapsed and AIG had to be bailed out by the federal government in 2008.



Source: *Bureau of Labor Statistics*

Source: *Bureau of Labor Statistics*

FIGURE 5.43 ***TOP*, CONSUMER PRICE INDEX (YEAR-TO-YEAR CHANGE); *BOTTOM*, AVERAGE HOURLY EARNINGS OF PRODUCTION AND NONSUPERVISORY WORKERS (YEAR-TO-YEAR CHANGE)**

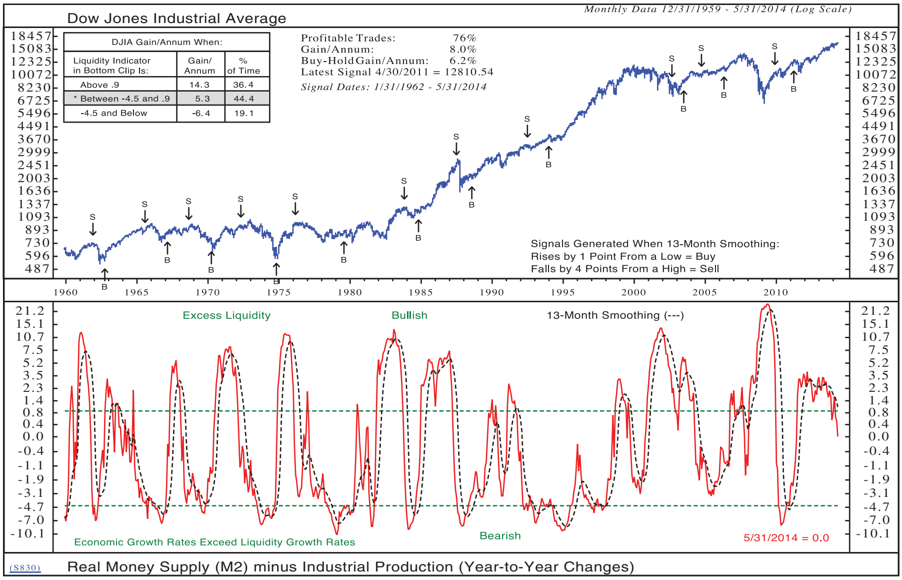
So there are two other indicators I would watch that would signal tightened financial conditions. First is the National Financial Conditions Index from the Chicago Fed, shown in Figure 5.45. This indicator still looks very easy.

Interest rates are shown in Figure 5.46. My guess is that if rates were to go clearly above 3.04 percent—the high at the end of 2013—it would be a sign of free-market, rather than Fed, tightening.

In conclusion, the Fed remains investor-friendly, but high levels of debt plus overweight stock and bond holdings on household balance sheets (Figure 5.34) tell me to closely watch other indicators of financial tightening in order to prepare for a potential pullback or moderate bear market this year.

WHAT DO DEMOGRAPHICS SAY?

I am not an expert on demographics, but NDR's Alejandra Grindal and Pat Tschosik, with help from our staff, have each produced quality work on the subject. Alejandra will go into detail about many demographic implications in Chapter 6.

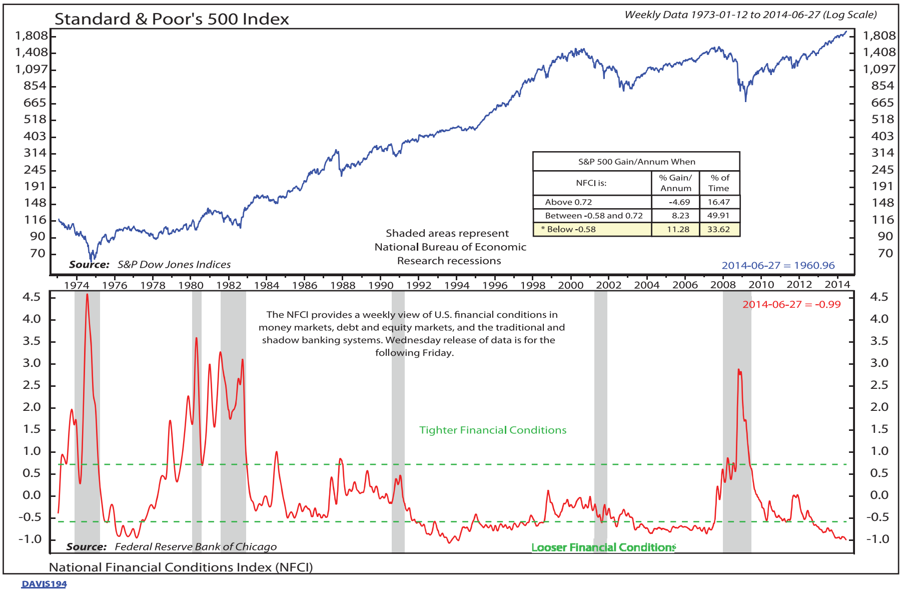


DJIA Gain/Annum When:		
Liquidity Indicator in Bottom Clip Is:	Gain/ Annum	% of Time
Above .9	14.3	36.4
* Between -4.5 and .9	5.3	44.4
-4.5 and Below	-6.4	19.1

Profitable Trades: 76%
Gain/Annum: 8.0%
Buy-Hold Gain/Annum: 6.2%
Latest Signal 4/30/2011 = 12810.54
Signal Dates: 1/31/1962 - 5/31/2014

Please see important disclaimer at the beginning of the book.

FIGURE 5.44 ***TOP*, DJIA WITH BUY/SELL SIGNALS; *BOTTOM*, REAL MONEY SUPPLY (M2) MINUS INDUSTRIAL PRODUCTION (YEAR-TO-YEAR CHANGES)**



S&P 500 Gain/Annum When		
NFCI is:	% Gain/ Annum	% of Time
Above 0.72	-4.69	16.47
Between -0.58 and 0.72	8.23	49.91
* Below -0.58	11.28	33.62

The NFCI provides a weekly view of U.S. financial conditions in money markets, debt and equity markets, and the traditional and shadow banking systems. Wednesday release of data is for the following Friday.

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FIGURE 5.45 ***TOP*, S&P 500 INDEX; *BOTTOM*, NATIONAL FINANCIAL CONDITIONS INDEX (NFCI)**

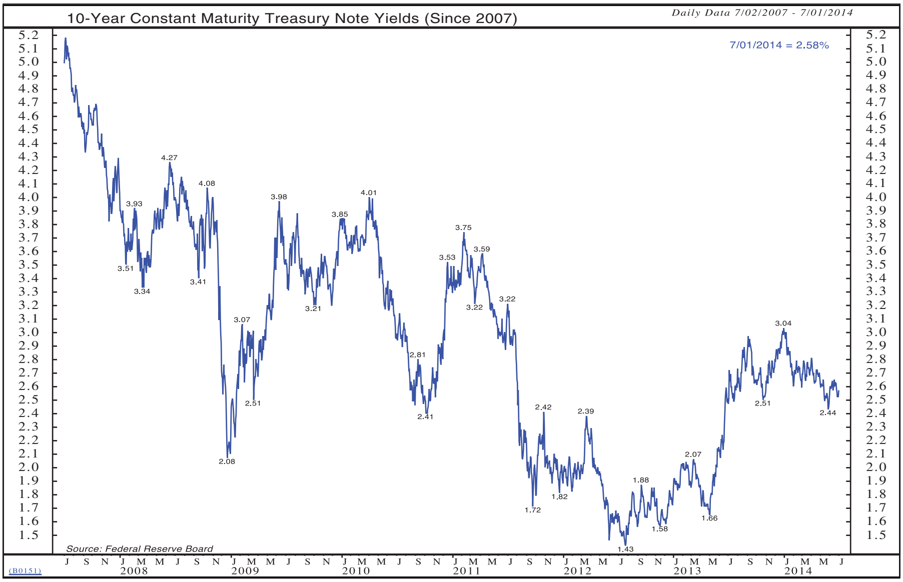


FIGURE 5.46 **10-YEAR CONSTANT MATURITY TREASURY NOTE YIELDS (SINCE 2007)**

But I'm going to give my two-cents' worth on the subject because I have had some really good (lucky?) calls that I credit to a chart on demographics. I think that chart also tells one to prepare for a potential bear market this year.

Here is what I said in my April 27, 2009 *Hotline*, right after the major low in stock prices:

> One of the great things about demographic analysis is that it is mostly determined by birth and life expectancy, and thus trend perspectives can be plotted years into the future.
>
> Thus, over 11 years ago, in my 2/20/1998 *Hotline*, I talked about people looking for the market to triple from there over the next 5–10 years based upon U.S. births moved ahead 46 years on chart S01725. I said, "I guess my problem with all this is that at some point, prices reach a level where they have discounted all the good news that can be seen. According to our chart of the Harry Dent concept, we've just about reached the point in real prices that one would have anticipated in, say, 2005." I then reprinted that very same chart in my 8/21/2006 *Hotline*

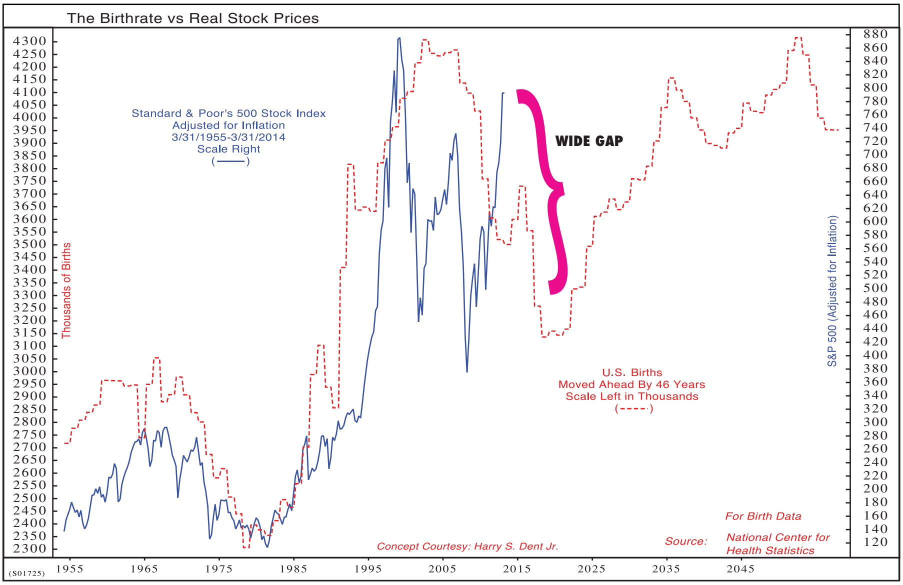


FIGURE 5.47 THE BIRTHRATE VERSUS REAL STOCK PRICES

> entitled "Secular Risk #5—Baby Boomers Close to Retirement." I now update that chart and one can see that, with a significant twist, birthrate demographics surely was helpful in calling this secular bear market. We have now declined to the level suggested by secular trends, suggesting that pricewise but not timewise, a lot of secular risks are probably behind us.

I had also made the same point about secular risks being largely priced in, before the secular low in a February 5, 2009 report.

The point I would make again now is that while we may have seen a secular low for a discounted demographic basis in 2009, Figure 5.47 still argues that timewise, there could still be further downside testing in our future.

As the title of this book makes clear, I do not know if the bear-market call in this chapter will "be right." But as is said, to be forewarned is to be forearmed. Hopefully, if things do turn down my advice will have prepared you to make money.

CHAPTER 6

The Aging World: Economic and Market Implications

ALEJANDRA GRINDAL

GLOBAL POPULATION VIEW

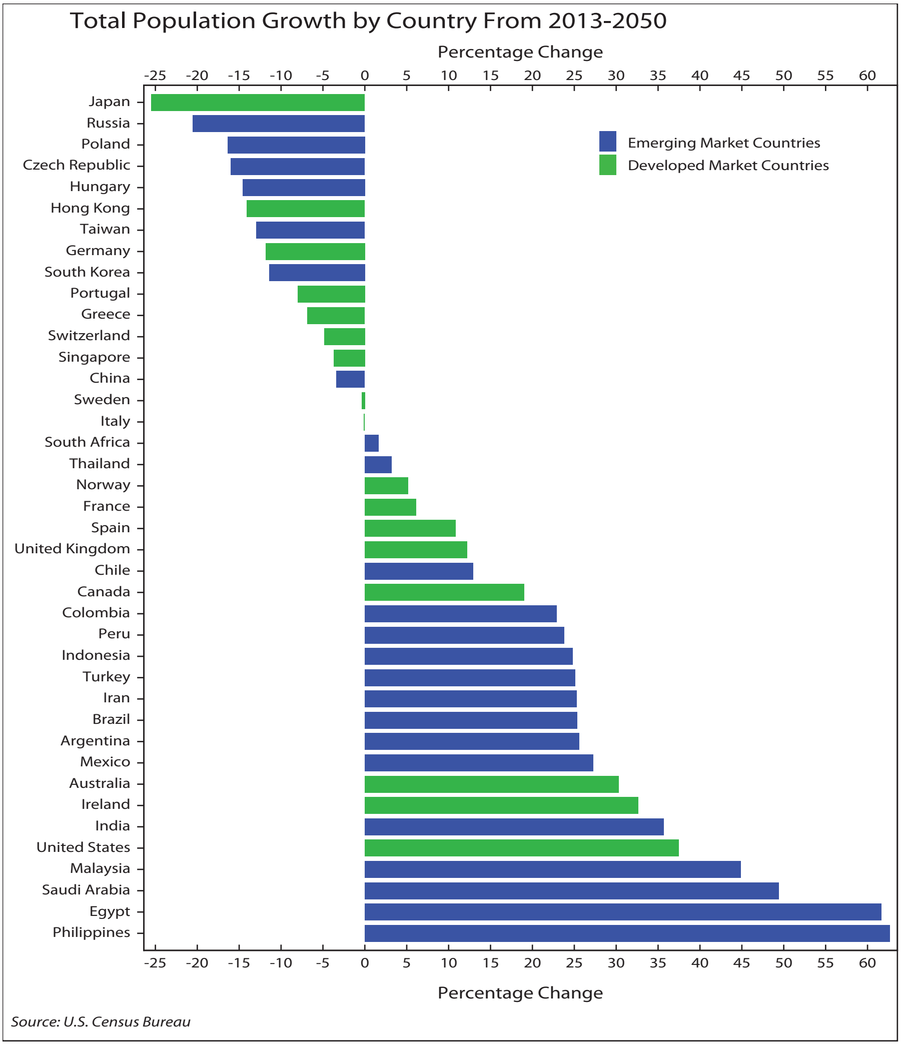
Rapid world population growth has been credited to the Industrial Revolution. In the early nineteenth century Thomas Malthus, the economist and demographer, predicted that massive population growth would result in a dystopian society. He concluded that food and resources would not be able to keep up with an expanding population, resulting in famine and conflict. Some 200 years later the population has grown by seven times and standards of living have increased dramatically due to advances in technology and productivity. However, current and future generations face new challenges. The world's population is growing at a slower rate, but it's getting much older.

Population Growth Slowing

The world is expected to have over 9 billion people by 2050, versus the 7.1 billion it had in 2013, according to U.S. Census Bureau research. But while the global population jumped by roughly 90 percent between 1970 and 2013, it is forecast to only rise by a little over a third over the next 40 years.

Much of the growth is projected to come from emerging and frontier economies. Some of the fastest gains will come from the Middle East and South Asia. Populations are also forecast to climb in Latin America. Developed countries' populations are expected to increase as well, but by a much smaller 4.5 percent. Among developed economies, populations are expected to expand in the United States, Canada, and Australia. The U.S. population will rise by 37 percent by 2050, more than the world average increase (see Figure 6.1).

Some countries, however, are projected to become less populous. Japan leads the way, with its population forecast to shrink by over a quarter by



Source: U.S. Census Bureau

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FIGURE 6.1 **TOTAL POPULATION GROWTH BY COUNTRY BETWEEN 2013 AND 2050**

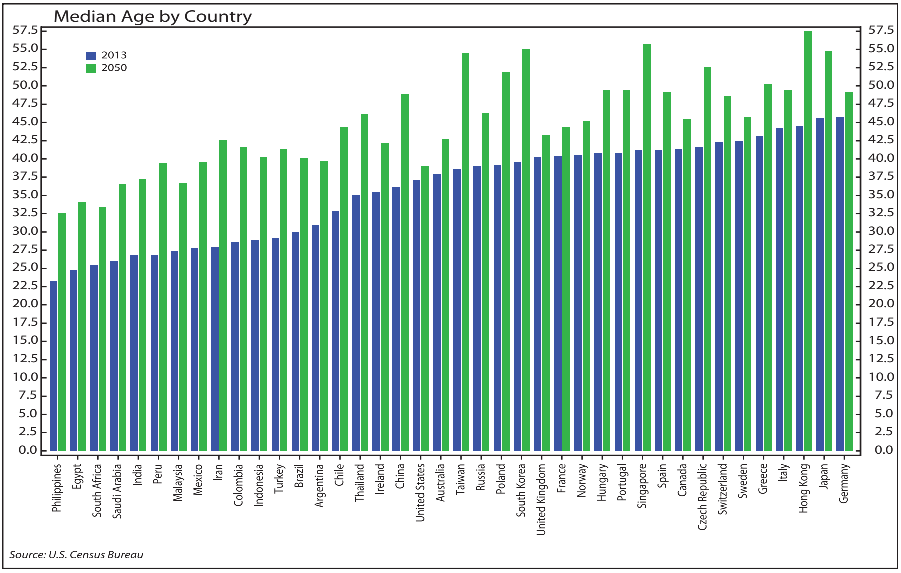
2050. Many developed and emerging countries in Europe are also likely to lose residents over the next 40 years, as are China and the Asian Tigers of Hong Kong, Singapore, Taiwan, and South Korea.

Among G20 countries, only the United States and India are expected to see their share of world population increase by 2050.

Median Age Rising

Despite their varying paces of population growth, almost all countries have one thing in common: an aging population. The world's median age is around 29 years old and is projected to surpass age 37 by 2050. The median age in the United States is 37, while Japan and Germany already have median ages close to 46. In contrast, the median age is still 25 or under in the Philippines, Egypt, South Africa, and Saudi Arabia (see Figure 6.2).

All major countries will see their median ages climb over the next 40 years, with some of the fastest aging coming in the Asian Tigers.



Source: U.S. Census Bureau

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FIGURE 6.2 **MEDIAN AGE BY COUNTRY**

Hong Kong, for example, will have a median age of almost 60 by 2050. The median age in some developed economies—such as the United States, the United Kingdom, and Australia—will remain fairly stable. Of the emerging and developed markets shown in Figure 6.2, *the United States will have the smallest increase and therefore one of the lowest median ages by 2050.*

Seniors' Share Rising

As of 2013, 8.2 percent of the global population was 65 or older. That proportion is expected to double in about 35 years (see Figure 6.3). Developed economies, in which seniors now make up more than 16 percent of the population, will see that figure climb past 25 percent by 2050. *The United States, however, will have the smallest proportion of seniors in the developed world—20.2 percent in 2050. In emerging lands, the percentage will rise to around 17 percent,* from roughly 6 percent in 2011.

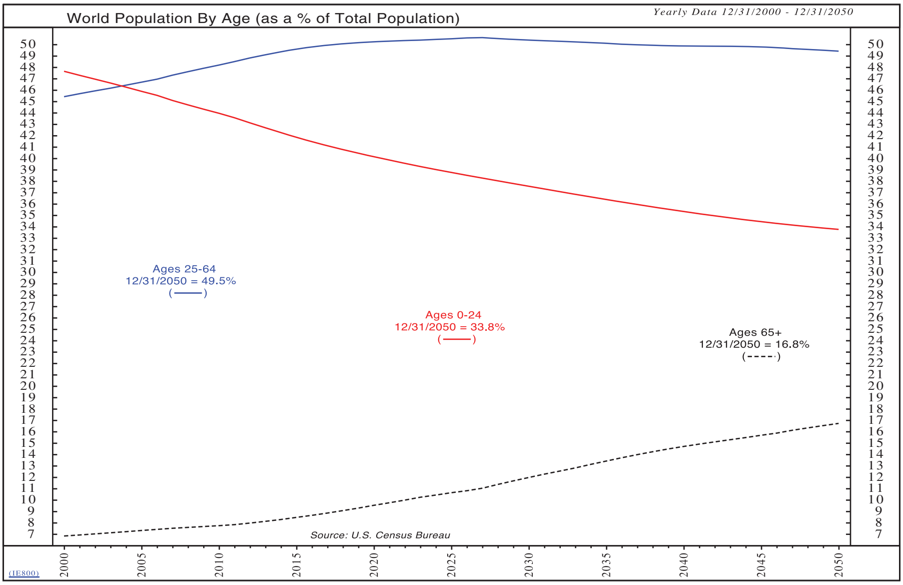


FIGURE 6.3 WORLD POPULATION BY AGE (AS A PERCENTAGE OF TOTAL POPULATION)

WHY IS THE POPULATION GETTING OLDER?

The world population has been getting older for two main reasons. People are having fewer children, while individuals are living longer. Both of these trends have been present in developed and emerging economies.

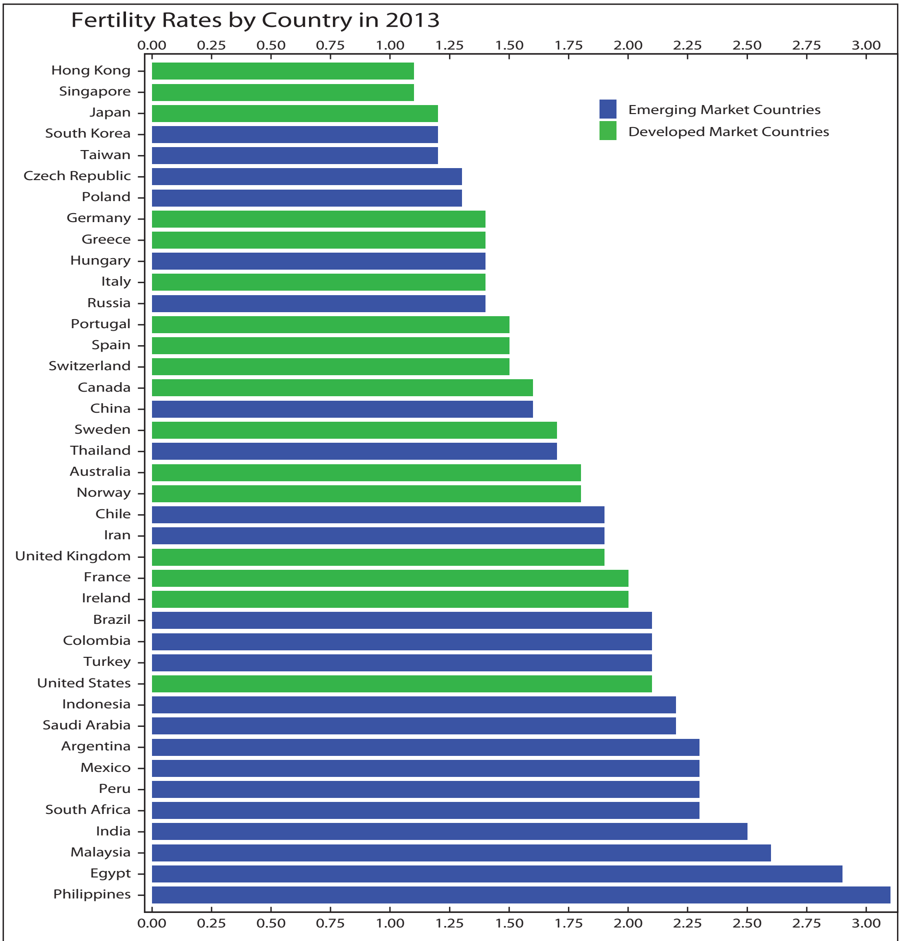
Fertility Rates Are Declining

Fertility rates around the world have been declining dramatically. Lower infant mortality, particularly in emerging and frontier countries, and greater use of birth control have contributed to the drop. Increased education among women has resulted in more job opportunities for them. As a result, women are having fewer children and having them later in life. During the period between 1950 and 1955, the number of children per woman was around five. Today the world's fertility rate is 2.5 and it is forecast to fall to 2.1 by 2050, in line with the replacement rate. This means that countries will no longer be able to count on expanding populations to support their dependents. Emerging nations, namely those in Southeast Asia, the Middle East, and Latin America, have higher fertility rates. *The United States is one of the few developed countries whose fertility rate isn't below its replacement rate.*

While emerging economies generally have higher fertility rates, there are many exceptions—such as China, South Korea, and Russia—where fertility rates are well below the replacement rate (see Figure 6.4). Even in the Middle East, a region whose residents have a reputation for having a higher number of children, fertility rates are falling sharply. Saudi Arabia's is currently 2.2, down from 7.0 in 1980. For the most part this trend has been voluntary. Although China is known for its one-child mandate, fertility rates are even lower in many fast-growing Asian countries that don't have such a policy.

People Are Living Longer

Due to improvements in medical care, sanitation, and nutrition, people are living longer. According to the United Nations, the world's life expectancy went from 47 years in the 1950s to 67 in 2010. Most of the gain has been



Source: U.S. Census Bureau

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FIGURE 6.4 **2013 FERTILITY RATES BY COUNTRY**

in emerging nations, in which life spans have climbed 25 years since the early 1950s.

Many developed countries, such as Japan, France, Sweden, and Italy, have life expectancies over 80. Numerous emerging countries, particularly in Asia and Latin America, have life expectancies that rival those of their developed counterparts. *The United States is in the middle of the pack at 79 years* *and has one of the lowest life expectancy rankings among developed countries despite having one of the world's most expensive healthcare systems.*

One of the few exceptions to the trend toward greater longevity is Africa, where the AIDS epidemic has had an enormous impact. According to the U.S. Census Bureau, HIV/AIDS has reduced female life expectancy in South Africa by over 28 years. Additional notable exceptions include Russia and other parts of eastern Europe, especially for males. Major culprits include alcoholism, smoking, and psychosocial stress (which often results in suicide).

DEMOGRAPHIC DEVELOPMENTS

Demographic Dividend

One of the most beneficial demographic periods that all countries experience is called the demographic dividend. This occurs when the working population is rising while the proportion of the young and old is falling. Assuming all else is constant, this translates to increased output per capita. This period can be associated with rising tax revenues, savings, and incomes, and can last for several decades.

East Asia and China, which have seen the proportion of their working-age populations advance substantially over the past several decades, have greatly benefited from their demographic dividends. Research has shown that the favorable demographics in East Asia have accounted for one-third of the growth in per capita gross domestic product since the mid-1970s.

Favorable demographics can get a country only so far, however. Many other emerging regions have had a similar demographic transition and have not seen the same growth. Sound fiscal and monetary policy, flexible labor markets, openness to trade and foreign investment, higher education, and improved health care are also needed for economic success.

Developed economies as a whole have reached the peak of their working-age population as a share of total population, with the proportion forecast to decline relatively quickly in the next several decades. Emerging economies, on the other hand, are projected to maintain an elevated ratio over the next 20 years, and the subsequent decline is not expected to be as extreme as the one in the developed world.

Table 6.1 shows the dependency ratio (DR)—the number of people aged 0 to 14 and 65 and older per 100 people aged 15 to 64—for selected

TABLE 6.1 DEPENDENCY RATIOS

Dependency Ratios

Major area, region, country	1970	1990	2000	2010	2020	2030	2040
World	74.8	63.8	59.0	52.4	52.2	53.0	55.5
More Developed	56.0	49.5	48.4	48.0	55.8	63.0	68.2
Less Developed	83.1	68.2	61.7	53.4	51.5	51.3	53.5
Advanced Economies							
Australia	59.2	49.7	49.6	48.0	55.6	61.8	65.4
Canada	61.3	47.0	46.3	44.0	53.0	64.8	67.5
France	60.5	51.8	53.6	54.2	62.3	68.3	73.3
Germany	58.5	44.7	47.0	51.2	56.7	71.9	81.1
Italy	55.7	45.8	48.3	52.5	58.0	65.8	81.8
Japan	45.3	43.4	46.6	56.4	69.9	74.7	87.2
Sweden	52.7	55.6	55.3	53.3	63.1	67.3	70.0
Switzerland	53.8	46.2	48.7	46.9	53.6	65.4	77.5
U.K.	59.0	53.2	53.4	51.4	57.2	63.1	67.4
U.S.	61.8	52.0	51.0	49.6	56.3	64.0	65.8
Latin America							
Argentina	56.7	65.6	60.7	54.9	53.9	52.8	53.3
Brazil	84.6	65.6	54.0	48.0	43.6	46.5	50.6
Chile	81.1	56.4	54.0	45.7	46.7	53.8	58.9
Colombia	97.1	69.0	60.1	52.3	49.9	50.4	52.3
Mexico	101.8	74.8	62.5	54.9	50.0	48.9	52.8
Peru	90.0	73.1	63.8	56.4	50.7	48.8	49.8
Venezuela	94.1	71.5	62.0	54.0	51.5	50.7	51.0
Asian Tigers							
Hong Kong	69.5	43.2	39.3	32.0	42.7	63.4	71.7
Singapore	72.8	37.1	40.5	35.9	41.1	60.8	76.1
South Korea	83.3	44.1	39.5	38.1	43.0	59.9	75.6
Other Emerging Asia							
China	77.3	51.4	48.1	38.2	40.3	45.1	58.5
India	79.6	71.7	63.8	55.1	50.3	47.3	46.3
Indonesia	86.8	67.3	54.7	48.3	43.8	44.2	48.9
Malaysia	92.5	68.6	59.1	54.1	50.1	52.4	52.8
Philippines	96.0	79.5	71.5	64.1	57.3	54.9	52.4
Thailand	90.4	53.2	44.7	41.7	41.8	48.6	58.1
Emerging Europe							
Czech Republic	50.2	52.0	43.7	40.6	54.9	57.5	61.1
Hungary	47.9	50.6	46.8	45.4	52.9	55.4	60.3
Poland	54.2	54.0	46.3	39.7	51.3	59.4	59.1
Russia	52.1	49.6	44.1	38.6	48.1	53.7	55.1
Turkey	85.0	67.1	56.0	47.8	44.9	45.0	48.2
Africa/Middle East							
Egypt	88.0	80.9	67.9	57.6	54.7	50.5	48.3
Iran	90.0	96.6	65.2	39.2	38.9	35.8	39.9
Saudi Arabia	93.1	83.0	72.5	49.9	47.0	41.9	39.8
South Africa	83.5	72.8	59.6	53.3	51.2	49.3	46.2

Source: Population Division of the Department of Economic and Social Affairs of the United Nations

Ned Davis Research Group *T_C6.1*

countries. A higher DR implies a larger financial burden on the working population to support dependents. A low DR is consistent with a favorable demographic dividend.

Developed Europe and Japan recorded their lowest dependency ratios in the period between the mid-1980s and 1990. Led by Japan, many of these countries will have ratios over 80 percent by 2040. The United States, Australia, and Canada have the best projected DRs among developed markets, with their ratios rising to around 65 percent by 2040, but are currently around their optimal ratios.

Many emerging markets have several good years ahead. Countries in Latin America will not see their dependency ratios rise until the mid-2020s. Asian nations, such as India and the Philippines, as well as South Africa and the Muslim world, will not see a bottom for at least another three decades.

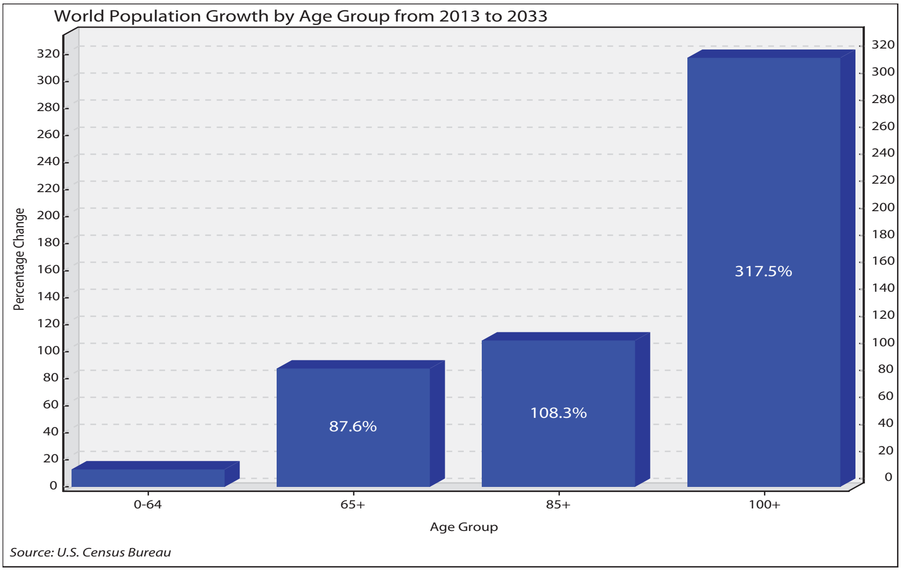
China, the Asian Tigers, Russia, and some other former Soviet countries are approaching the peak of their prime demographic period. Unlike some of their more developed counterparts, their peaks will come at a time when their population isn't as affluent. Turkey is one of the few bright spots in eastern Europe; its ratio is not expected to trough for another decade.

Countries can also take advantage of the so-called second dividend—when a large portion of the working population is older and faces a long life expectancy. This generation has an incentive to amass assets for retirement. This increased savings results in greater capital accumulation, thereby increasing productivity. And unlike the first dividend, this second isn't transitory and can result in a permanent increase in capital. But if the aging workforce chooses to take its chances and rely on public or family support instead, a second dividend may not be realized.

According to research done by Andrew Mason, a respected demographic economist, the second dividend has generally contributed more to economic growth than the earlier stages of the demographic dividend. Analysis from 1970–2000 among the world's regions shows that all have had a positive economic impact from their second dividend, with the largest gain seen in East and Southeast Asia.

Oldest Getting Older

Another significant development of the twenty-first century is that the oldest are getting older. This will be a burden for future generations who may have to care for children, parents, and grandparents at the same time. Globally, the number of individuals 100 or older will rise by almost 320 percent by 2033 (see Figure 6.5). This compares with a less than 15 percent gain among those aged 0–64 and an 88 percent increase for those age 65 and up. Japan is the most extreme case. By 2030, 6.6 percent of its total



Source: U.S. Census Bureau

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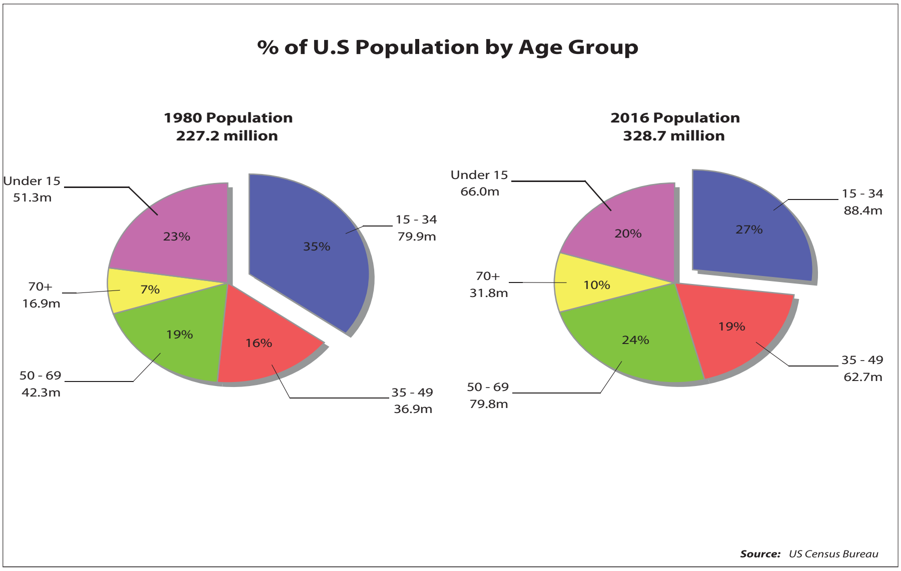
FIGURE 6.5 **WORLD POPULATION GROWTH BY AGE GROUP, 2013–2033**

population and almost a quarter of its older population will be over 85. In comparison, *the share of the U.S. population over 85 will only be 2.3 percent in 2030.*

Echo Boom versus Baby Boom

Around World War II most developed countries experienced a baby boom. These booms were a complete anomaly, being the only time since the Industrial Revolution that fertility rates have spiked. Government policy, the dramatic change in sentiment following the war, or both, likely played major roles. Most developed economies are starting to see their baby boomers retire, contributing to the rapidly aging world. But for most of these countries, such as those in Europe and Japan, the baby-boom generation had many fewer children, and in almost all cases a number well below the replacement rate.

The United States is an exception. It too had a baby boom, but its fertility rates were, for the most part, the developed world's highest and



Source: *US Census Bureau*

FIGURE 6.6 **U.S. POPULATION BY AGE GROUP, 1980 VERSUS 2016**

consistently around the replacement rate. As a result, the echo-boom generation—the children of the baby boomers—accounts for an enormous portion of America's population. *Helped by immigration, there will be 8 million more echo boomers than baby boomers by the end of 2016* (see Figure 6.6). The United States will then be one of the best, if not the best, demographically positioned nations in the developed world. Although the echo-boom cohort is larger, it makes up a smaller portion of the nation's population than the baby boomers did in the early 1980s (27 percent versus 35 percent). As a result, echo boomers' spending might not be as potent as their parents' was, particularly in light of a weak labor market for young adults, rising household debt, and low savings.

Implications of Aging Populations

The economic implications of an aging population are clear. As the dependency ratios tell us, there will be fewer working people supporting a nonworking population, thereby putting downward pressure on per-capita

GDP growth. These weaker economic prospects will gradually affect the stock market, savings, interest rates, and inflation, especially if current behaviors aren't altered to accommodate the change in the demographic landscape.

Stock Market

For quite some time, we've stressed the importance of demographics and, in particular, its relationship to equity markets. One popular way of depicting this relationship is through the MY ratio, which looks at the ratio of middle-aged individuals to young people. When people are young and just entering the workforce their wages and salaries are typically low; they are starting families and saving for retirement is less of a concern. As a result, spending takes a larger share of income. When individuals approach middle age, incomes generally start peaking, there are more dual-income households (because of a greater incidence of marriage), and there's greater urgency to save for retirement. The premise is that this additional income is put into asset markets, driving up prices. As a result, when the MY ratio is rising, stocks should outperform, while a falling MY ratio is consistent with lower stock performance. *The ratio for the United States peaked in 2000 when the U.S. secular bear market began, and has been declining since then* (see Figure 6.7). But it is set to begin rising again around 2015 as the echo boomers start entering their mid-thirties.

Our testing through regression analysis shows that the relationship between the MY ratio and equity markets is by far strongest in the United States, followed by other developed markets, and then emerging markets. A more limited historical record for emerging markets is partly to blame for the weaker relationship. But we also suspect that the results are due to a smaller amount of money coming from individuals in emerging economies. This is attributable to relatively lower incomes versus those in developed economies, plus a lack of developed retirement schemes, such as 401(k)s. Also, emerging stock markets are smaller than developed ones, so there's a greater inclination for investments to be placed abroad. If one looks at the MY ratio for the United States prior to 1945 the relationship was not as significant. Similar to emerging markets today, the United States then had a less developed pension-plan structure and relatively lower incomes to save for retirement.

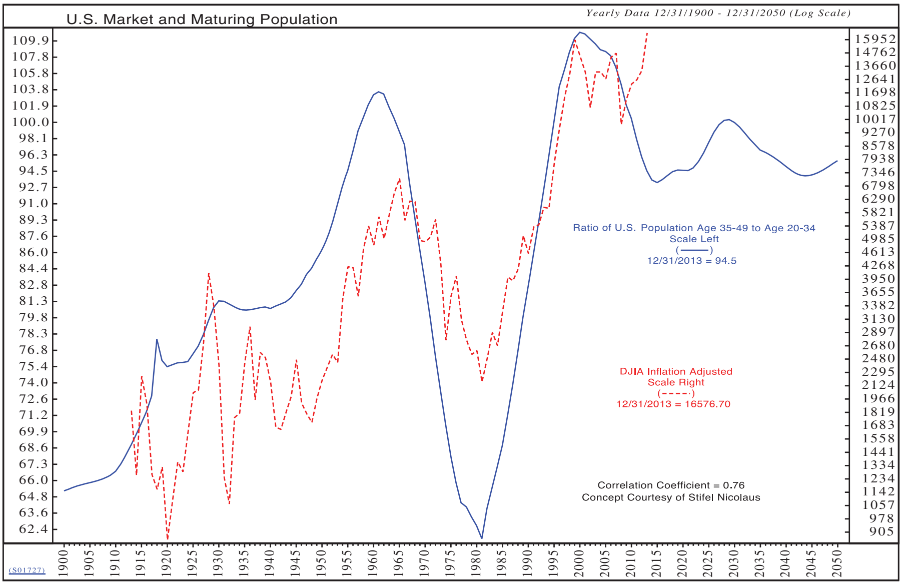
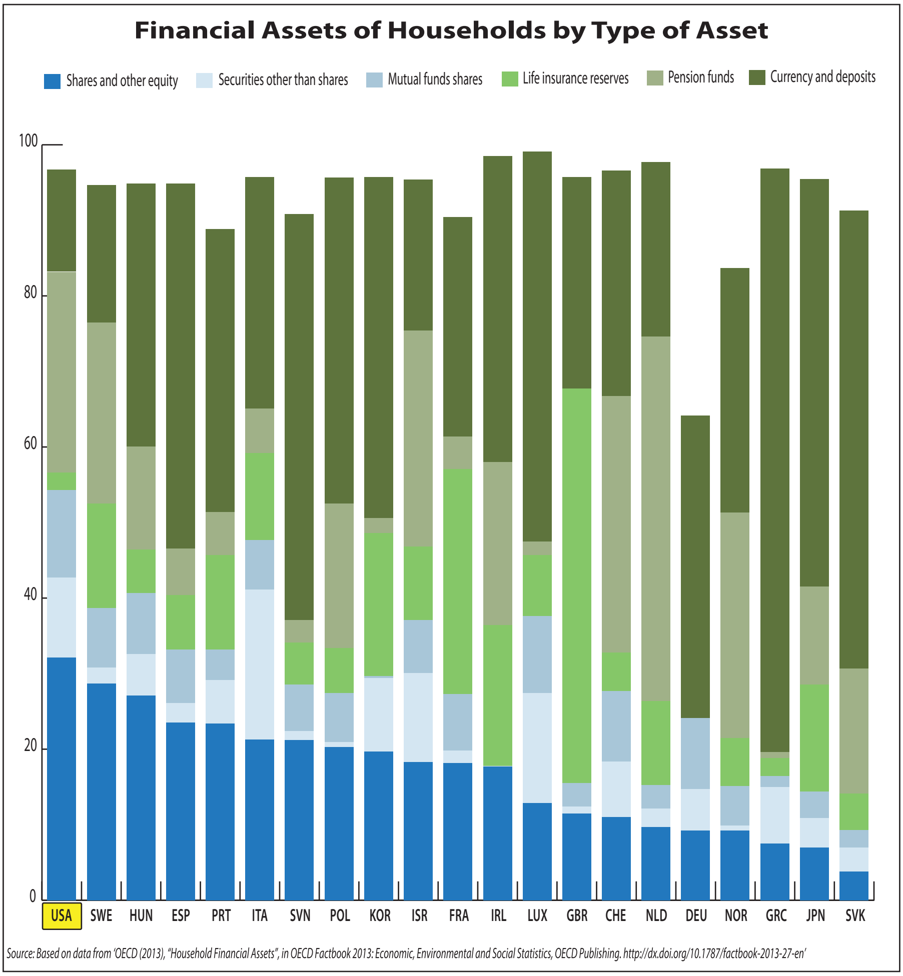


FIGURE 6.7 **THE U.S. STOCK MARKET AND A MATURING POPULATION**

The chart in Figure 6.8 helps show why the MY ratio has had such a great track record in the United States. According to the Organisation for Economic Co-operation and Development (OECD), U.S. households' share of equities as a percentage of total assets is one of the largest in the world. Stocks are also present in mutual-fund shares, life-insurance reserves, and pension funds, which the OECD reports as separate categories. As a result, we estimate that equities make up about 50 percent of total household assets in the United States. On the flip side, U.S. households' proportion of cash compared to total assets is one of the smallest in the world at just 13.5 percent. This compares with Japan's 54 percent, Germany's 40.1 percent, and the United Kingdom's 28 percent. Although the OECD reports on just a few emerging markets, these tend to hold larger shares of cash compared with their developed counterparts. Perhaps as emerging equity markets become larger and more developed and their household incomes rise, MY ratios in these countries could gain more significance. In fact, emerging economies' relatively younger populations already point to faster-growing MY ratios over the next few decades.



Source: Based on data from 'OECD (2013), "Household Financial Assets", in OECD Factbook 2013: Economic, Environmental and Social Statistics, OECD Publishing. http://dx.doi.org/10.1787/factbook-2013-27-en'

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FIGURE 6.8 FINANCIAL ASSETS OF HOUSEHOLDS BY TYPE OF ASSET

Pat Tschosik, Ned Davis Research's consumer strategist, has come up with various themes to play U.S. demographic trends at the consumer level in the coming years, taking into account the large number of echo and baby boomers. In his view, the two investment categories with the strongest demographic tailwinds are housing and health care. Healthcare spending will be driven by the aging population and new laws that will increase utilization of the medical system by younger and healthier age groups. Housing will be driven by new household formation by echo boomers and the fact that homeownership rates rise with age. The e-commerce, value/discount retailing, and leisure and entertainment sectors will likely also benefit from U.S. demographic trends.

Savings

Life-cycle analysis tells us that savings will decline once individuals retire and are no longer adding to their incomes. Japan, one of the world's fastest-aging nations, was known for its high savings in the 1980s. But its personal saving rate has declined dramatically since 1990, when its working population peaked as a share of its total number of inhabitants. Japan's Lost Decade began around the same time. At the dawn of the twenty-first century, many people saved for retirement by investing in housing, particularly in the United States, the United Kingdom, Australia, Spain, and Italy, where the homeownership rate is high. In fact, personal saving rates declined in many of these countries during the housing boom. Then the housing bubble burst in many western societies, destroying wealth that had been earmarked for retirement.

Expectations of longer lives and reduced government support may alter individuals' saving patterns in the future. So far there hasn't been much evidence of this in most of the developed world, where saving rates have been declining despite aging populations. According to the OECD, 4 out of 10 U.S. workers are not putting money away for retirement. Conversely, increased savings is much more evident in Asia, where many countries have smaller social safety nets and large current-account surpluses.

Financial Burdens on the Government and Younger Generations

An aging population will put an increased burden on governments, which often provide aid to seniors through various forms of income support.

The Center for Strategic and International Studies estimates that public benefits to the elderly as a percentage of GDP is highest in developed countries, where social safety nets are more inclusive. Such spending accounts for over 17 percent of the economy in much of developed Europe—led by Italy, France, and Germany—and could hit about 25 percent by 2040 (see Table 6.2).

TABLE 6.2 TOTAL PUBLIC BENEFITS TO THE ELDERLY AS A PERCENTAGE OF GDP

Total Public Benefits to the Elderly as a Percent of GDP

Country	2010	2020	2030	2040
Italy	20.0	20.5	22.5	25.7
France	18.6	20.3	22.6	24.3
Germany	17.0	18.4	21.9	24.3
Spain	13.9	16.1	18.9	23.6
Japan	15.1	16.6	17.9	20.9
Netherlands	10.2	12.9	17.0	19.8
Switzerland	10.4	12.4	15.9	19.5
Sweden	15.2	16.7	18.4	19.3
Brazil	10.0	11.5	14.6	19.3
U.K.	13.9	14.6	17.0	18.9
U.S.	11.1	13.6	16.7	18.5
South Korea	4.5	7.8	12.2	16.2
Canada	9.3	11.8	14.2	15.8
Poland	11.7	13.5	14.7	15.2
Australia	9.1	10.3	12.0	15.2
China	3.4	5.5	8.0	11.0
Russia	8.2	9.3	10.1	10.9
Chile	6.9	6.6	6.7	7.2
Mexico	2.9	3.5	4.1	4.1
India	1.9	2.4	2.5	2.5

Source: Center for Strategic and International Studies Center for Strategic and International Studies

Ned Davis Research Group *T_C6.2*

While Japan is one of the globe's fastest-aging countries, its less generous pension system will put a smaller burden on its public finances. The United States, Canada, and Australia face less of a weight relative to other developed economies due to more favorable demographics. But the share of U.S. GDP going to the elderly is likely to climb by 7.4 percentage points, to 18.5 percent, by 2040. Unless changes are made now, the United States will get an unpleasant surprise in the coming decades.

Emerging markets, such as China, India, and Mexico, generally have far less inclusive and generous pension systems. The percent of workers covered by mandatory pension schemes is generally much lower. China and India have coverage rates of 9.1 percent and 20.5 percent, respectively, versus around 90 percent in most developed economies. As a result, seniors in emerging economies are likely to have a more limited direct impact on public finances. Instead, they will depend more on support from their families. The share of seniors living with their children ranges from more than 80 percent in India, 69 percent in China, and 61 percent in Mexico to just 5 percent in Sweden, 7 percent in Germany, and 20 percent in the United States. However, falling fertility rates mean that there will be fewer children to rely on for financial aid. And some of the countries that depend most on their children—namely Mexico, Brazil, China, and South Korea—will see the largest declines in fertility rates over the next 30 years.

Inflation

How aging populations will affect inflation isn't clear. But low inflation seems probable, due to decreased spending. Also, seniors will be less likely to vote for inflationary policies, because these would hurt the purchasing power of savings and pensions, which are often fixed. Japan's more-than-decade-long deflation may be partly explained by its aging population.

But as the population ages and individuals leave the workforce, labor shortages (due to a smaller pool of workers) could put upward pressure on wages and ultimately prices. If skilled people emigrate out of a country the situation could worsen.

Higher productivity could perhaps stem some price gains. But faster productivity growth may be harder to come by as countries age. Many of the services that seniors demand, such as health and old-age care, are labor-intensive and not associated with global competitiveness, thereby resulting in lower productivity.

In the end, inflation is still largely determined by monetary and fiscal policies, which are difficult to project in the longer term.

Interest Rates

Like inflation, interest rates could go up or down.

Rates and asset prices could slide, due to lower return on capital relative to labor, as labor prices would be high amid a scarcity of skilled labor. But if governments accumulate higher public debt it will put upward pressure on real rates (see Table 6.3). For many developed countries—including the United

TABLE 6.3 COUNTRIES VULNERABLE TO HIGHER REAL INTEREST RATES

WHICH COUNTRIES ARE VULNERABLE TO HIGHER REAL INTEREST RATES

Country	General Government Debt as a % of GDP	Gross Public Pension Replacement Rate	Share of Population 65+
Japan	229.5	35.6	24.5
Greece	174.7	53.9	20.9
U.S.	125.0	38.3	13.8
Italy	124.4	71.2	20.8
Portugal	120.4	54.7	18.4
Ireland	119.0	36.7	12.1
Spain	114.4	73.9	17.5
France	113.1	58.8	17.6
U.K.	96.7	32.6	17.3
Germany	88.5	42.0	20.9
Canada	80.7	39.2	16.8
Sweden	48.9	33.9	20.5
Australia	31.2	13.6	14.7

Source: OECD Pensions at a Glance 2013, Haver Analytics, U.S. Census Bureau

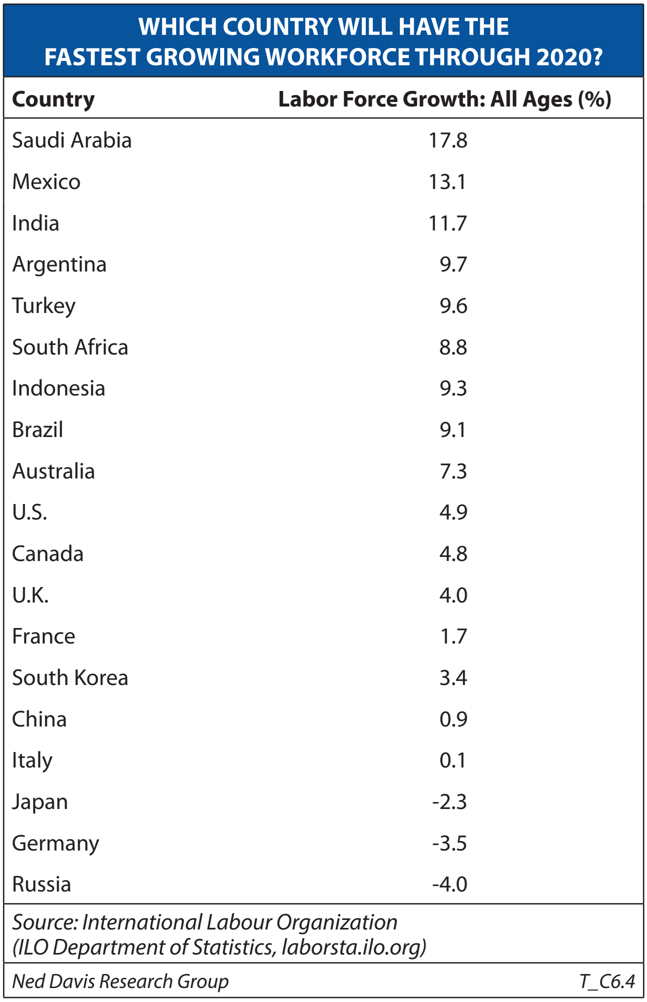
Ned Davis Research Group *T_C6.3*

States, Germany, the United Kingdom, France, Italy, and Canada—large budget deficits have been associated with rising real interest rates. Countries with high government debt burdens, the most generous pension programs, and the fastest-growing aging populations are at the highest risk. The United States has one of the world's largest general government debt burdens, but a relatively less generous public pension scheme and a comparatively smaller share of the population over age 65. Japan (with the highest government debt in the world and the fastest-aging populace), as well as Greece and Italy (which have high debt, generous pensions, and rapidly aging populations), are susceptible to higher real rates. Elevated real interest rates could potentially discourage investment due to the high cost of borrowing.

Ways to Offset a Declining Workforce

The labor market is key to country's potential GDP growth. Holding all else (such as technology and innovation) constant, a shrinking workforce reduces that potential. Among G20 economies, Russia, Germany, and Japan

TABLE 6.4 **WORKFORCE GROWTH THROUGH 2020, SELECTED COUNTRIES**



WHICH COUNTRY WILL HAVE THE FASTEST GROWING WORKFORCE THROUGH 2020?

Country	Labor Force Growth: All Ages (%)
Saudi Arabia	17.8
Mexico	13.1
India	11.7
Argentina	9.7
Turkey	9.6
South Africa	8.8
Indonesia	9.3
Brazil	9.1
Australia	7.3
U.S.	4.9
Canada	4.8
U.K.	4.0
France	1.7
South Korea	3.4
China	0.9
Italy	0.1
Japan	-2.3
Germany	-3.5
Russia	-4.0

Source: International Labour Organization (ILO Department of Statistics, laborsta.ilo.org)

Ned Davis Research Group *T_C6.4*

are expected to see their labor forces shrink by 2020. Conversely, Saudi Arabia, Mexico, and India will have the fastest growth, with all recording double-digit expansion. *After Australia, the United States is expected to see the largest increase in its workforce among developed economies by 2020* (see Table 6.4).

There are various ways a country can try to increase its workforce; these are described next.

Retirement Age

Raising the retirement age expands the size of the workforce and reduces government economic burdens. While countries have tried to boost the retirement age, their efforts probably haven't been sufficient. The average pensionable age for males in OECD countries is 62.9. Pension reforms project an increase to 64.6 by 2050, but that won't be enough to offset the five-year gain in life expectancy anticipated by then in the developed world. As a result, the average postretirement life expectancy will reach 20.3 years by 2050, compared with 18.5 years in 2010 and led by European countries. Not surprisingly, workers in emerging economies spend less time in retirement than do their counterparts in developed countries (except for the United States and the United Kingdom).

The workforce participation rates for the elderly are relatively high in Scandinavia and the United Kingdom, while France, Italy, Austria, and Belgium have low rates, and eastern Europe has an even lower rate. According to the OECD, Greece, Italy, Spain, Poland, and Slovakia are the worst off in terms of low senior workforce participation and high old-age dependency. Contributing to the problem, many industrialized countries' public pension systems provide large incentives for retiring early.

Increasing the official retirement age would solve only part of the problem. More jobs, both full- and part-time, are needed for the elderly, as are more training opportunities. And discrimination against older workers must be combated. Australia, Finland, France, the Netherlands, Norway, and the United Kingdom are setting good examples through their public-service announcements against ageism.

Immigration

The population projections in this chapter include immigration forecasts. Immigration rates in Australia, Canada, and the United States are among the highest in the world today and are expected to remain strong over the next several decades. By 2050 the United States will be the main recipient of immigrants, with the largest number of emigrants coming from China, Mexico, India, the Philippines, and Indonesia. Immigration is not a win-win equation; one country's gain is another's loss.

Most migration flows won't prevent population declines unless they're much larger than in the past, which is highly unlikely. The pool of young workers, the most attractive migrants, is declining. Additionally, if emerging economies continue their path of development, there will be less incentive for the young to leave their home countries for better opportunities. So while immigration may help, it's not the primary solution.

Fertility Rates

Numerous countries offer incentives to increase fertility rates. Parts of Russia celebrate Day of Conception, a holiday with cash prizes if the day is a success. Other European countries, such as France and Spain, have also offered inducements. Australia has introduced payments for birth, South Korea has offered incentives to families that have a second child, and Singapore has set up a government-sponsored dating service. Even China has started to relax its one-child policy. But so far these offers have had only minor effects.

Therefore, birth incentives need to change. So do support programs for families with children.

Women in the Workforce

In almost every major country around the world fewer females than males participate in the labor market. Boosting their participation would help offset the impact of aging populations. Countries with the smallest gaps between male and female participation rates are Norway, Sweden, and Canada. Not surprisingly, they also have some of the world's highest overall female participation rates; along with China, Thailand, and Switzerland, all have shares above 60 percent. On the other end of the spectrum are some Middle Eastern countries, with less than a quarter of their females economically active. Close behind are other emerging markets, namely India, Colombia, Chile, and Hungary. Even some developed markets, such as Italy and Greece, could benefit from having more women in the workforce (see Table 6.5). Females are often excluded from higher educational levels for cultural reasons, as in India and Egypt where female literacy rates are 48 percent and 59 percent, respectively. Addressing this now may prove beneficial to many emerging markets when their populations start aging in 20 years.

TABLE 6.5

PERCENTAGE OF ECONOMICALLY ACTIVE FEMALES, SELECTED COUNTRIES

Female Economically Active Population Rate

Country	2010
Saudi Arabia	21.5
Egypt	22.3
Turkey	23.7
Iran	32.2
India	32.7
Italy	38.4
Colombia	40.9
Chile	42.3
Hungary	42.4
Greece	42.8
Mexico	43.7
Malaysia	44.5
Poland	46.0
South Africa	47.0
Japan	47.8
Czech Republic	48.6
Philippines	49.2
Spain	49.6
South Korea	50.1
France	50.5
Indonesia	52.1
Hong Kong	52.2
Argentina	52.9
Germany	53.5
Singapore	53.7
Ireland	54.7
U.K.	55.4
Portugal	56.2
Russia	58.0
U.S.	58.3
Australia	58.5
Peru	58.5
Brazil	60.4
Sweden	60.6
Switzerland	60.7
Canada	62.9
Norway	63.1
Thailand	65.5
China	67.2

Source: International Labour Organization (ILO Department of Statistics, laborsta.ilo.org)

Ned Davis Research Group *T_C6.5*

And contrary to popular belief, working mothers don't necessarily produce fewer children, particularly if adequate and cost-effective child care is available. Japan, Russia, and Italy have some of the lowest workforce participation rates for women in the world but also the lowest fertility rates. Sweden, Norway, Ireland, and the United States are just the opposite.

Conclusion

The bottom line is that the aging of the population in many countries will have a profound impact on the global economy and markets. Some countries are growing older much faster than others. Most developed economies, particularly those in Japan and Europe, are aging at a dramatic rate and will have to make difficult decisions fairly quickly about future pension obligations, along with focusing on ways to increase their workers' productivity. Most emerging economies, particularly those in Southeast Asia, India, Africa, the Middle East, and Latin America, have several decades to take advantage of their favorable demographics.

The good news for U.S. investors: the United States is one of the best demographically positioned countries in the world. Its elevated fertility and immigration rates put it above all developed economies, as well as many emerging ones. If the United States can reduce its debt and reinvigorate its economy, its favorable demographics could set the stage for another secular bull market in equities.

CHAPTER 7

United States Energy Independence—A Game-Changer

JOHN LAFORGE

How realistic is the goal of the United States achieving energy independence? Some speak of it as if it is a foregone conclusion; some, as if it is complete fantasy. The latter is understandable, considering that every president since Nixon has declared the need for energy independence. For decades, energy independence has been mostly talk (politics) and no action (data). However, the game seems to be changing. Freshly unearthed supplies of oil and natural gas have sparked new hope for independence.

In this chapter we're going to cut through the fibs and the fantasies and give you the facts—the facts as they stand today, anyway. With any luck this book will have some shelf life, which will make for entertaining follow-up reading a decade from now. By then, United States energy independence should be a reality.

Let's begin with a question: Is the United States energy independent today? At a basic but real level, the answer is no. In 2013 the United States produced 81 quadrillion British thermal units of primary energy (Figure 7.1, red line) but consumed about 97 quadrillion BTUs (blue line). Primary energy is the raw energy source (such as oil, coal, natural gas, or biomass) that is used to produce the tertiary energy we use every day (such as electricity). The United States has been energy dependent since 1956 (the gap between the lines on the chart).

Most of the 81 quads produced in the United States are natural gas (Figure 7.2, blue line) and coal (red line). This may be surprising, as oil

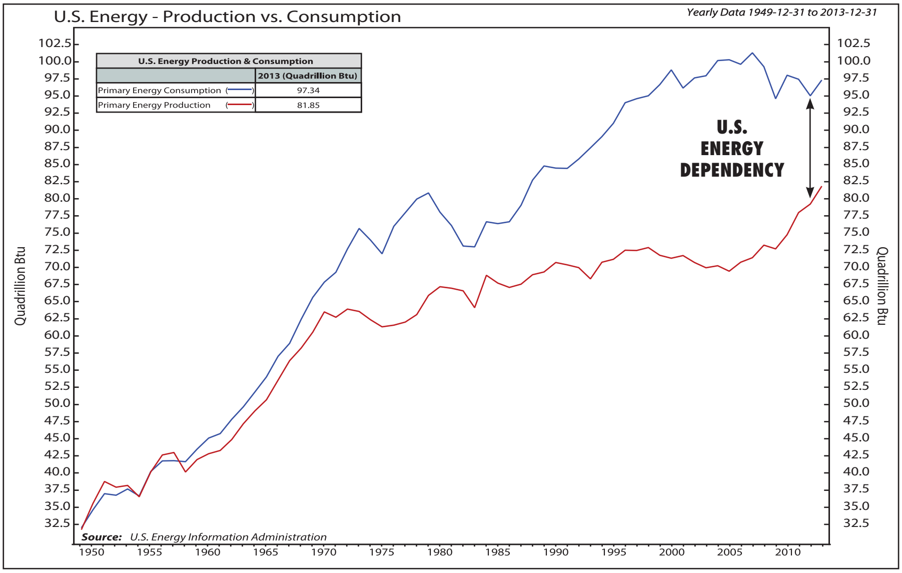


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FIGURE 7.1 U.S. ENERGY—PRODUCTION VERSUS CONSUMPTION

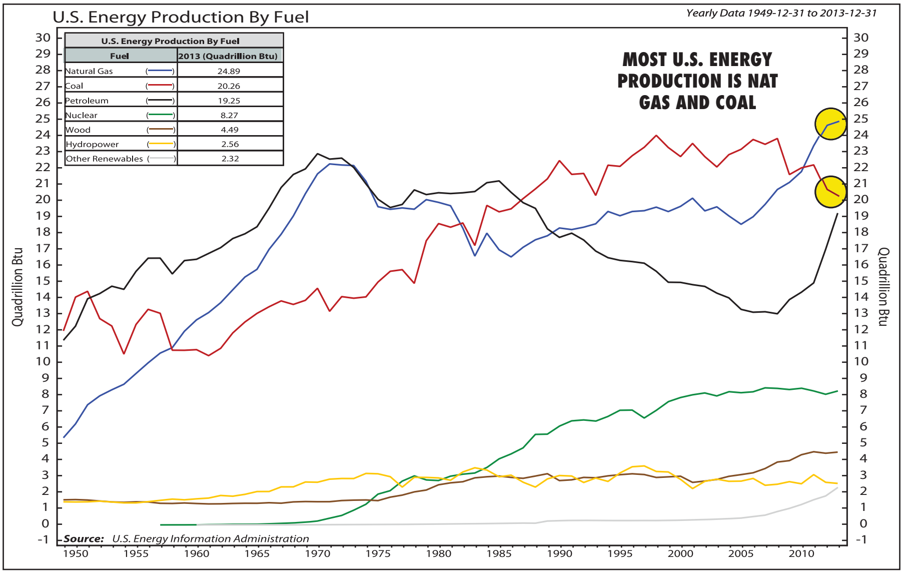

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FIGURE 7.2 U.S. ENERGY PRODUCTION BY FUEL

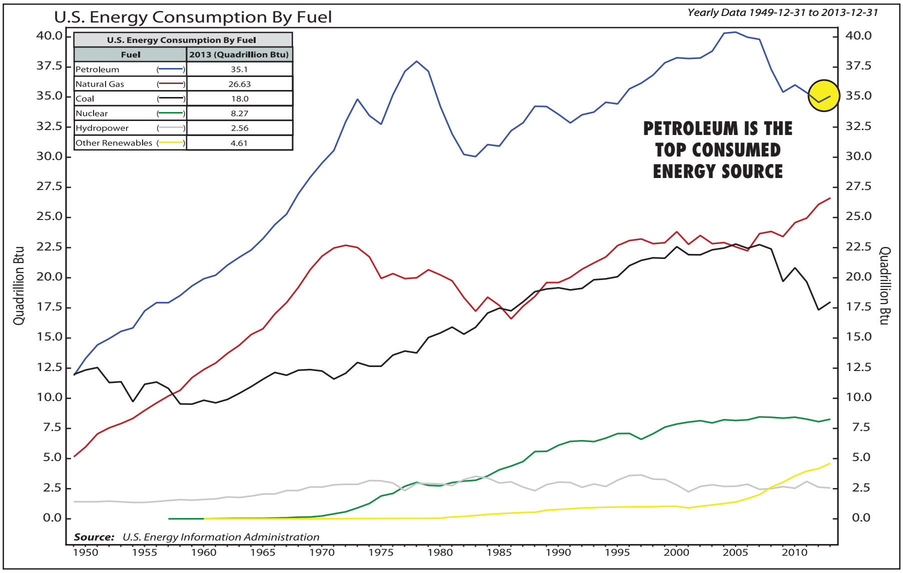
(black line) is the energy source that attracts the most attention. (Ever hear on the news that U.S. troops have surrounded the natural gas fields or coal mines of another country?)

When we discuss energy independence, we mean total energy and not just oil. That sounds simple enough, but this distinction, although critical, is often confused. Oil stats are referenced frequently when energy independence is discussed, but oil, as the chart in Figure 7.2 shows, is only part of the story. *Oil is critical to the discussion, however, so we will begin there.*

WHAT THE UNITED STATES CONSUMES

Americans consume more petroleum than any other energy source: of the 97 quads the United States consumed in 2013, 35 quads were petroleum (Figure 7.3, blue line).

In fact, the United States' energy dependence is almost entirely due to a petroleum deficit. The gap in total energy shown on Figure 7.1



U.S. Energy Consumption By Fuel	
Fuel	2013 (Quadrillion Btu)
Petroleum	35.1
Natural Gas	26.63
Coal	18.0
Nuclear	8.27
Hydropower	2.56
Other Renewables	4.61

Source: *U.S. Energy Information Administration*

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FIGURE 7.3 **U.S. ENERGY CONSUMPTION BY FUEL**

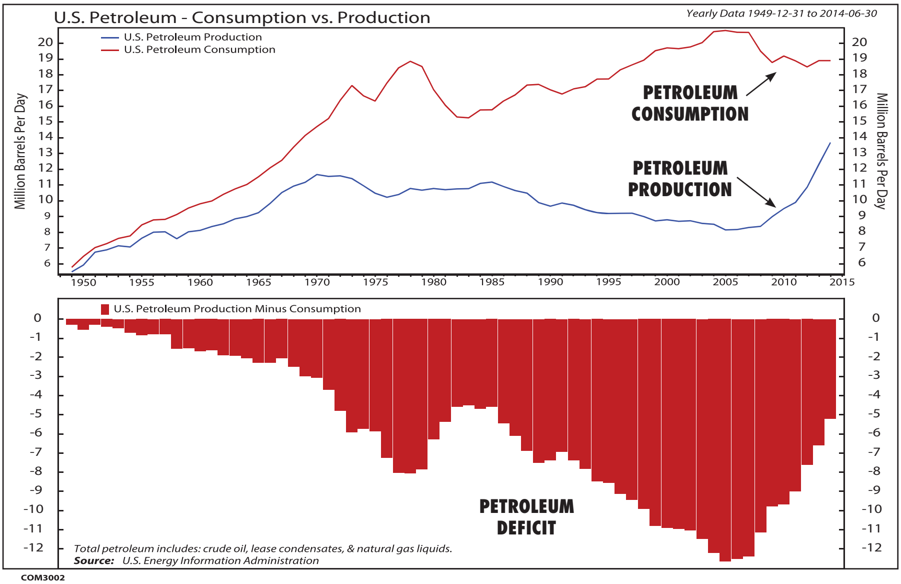

FIGURE 7.4 **U.S. PETROLEUM CONSUMPTION VERSUS PRODUCTION**

amounts to 16 quads (97 minus 81). Oil accounts for all of that and then some.

A more common way of visualizing this gap is through barrels of oil. Figure 7.4 shows that as of June 30, 2014, the United States was

TABLE 7.1 **U.S. ENERGY CONSUMPTION VERSUS PRODUCTION**

U.S. ENERGY CONSUMPTION VS. PRODUCTION

Energy	Consumption	Production	Deficit/Surplus
Petroleum	35.1	19.2	-15.9
Natural Gas	26.6	24.9	-1.7
Coal	18.1	20.0	1.9
Nuclear	8.3	8.3	0.0
Hydropower	2.6	2.6	0.0

U.S. PETRO DEPENDENCY

All values in Quadrillion Btus.
Source: EIA.

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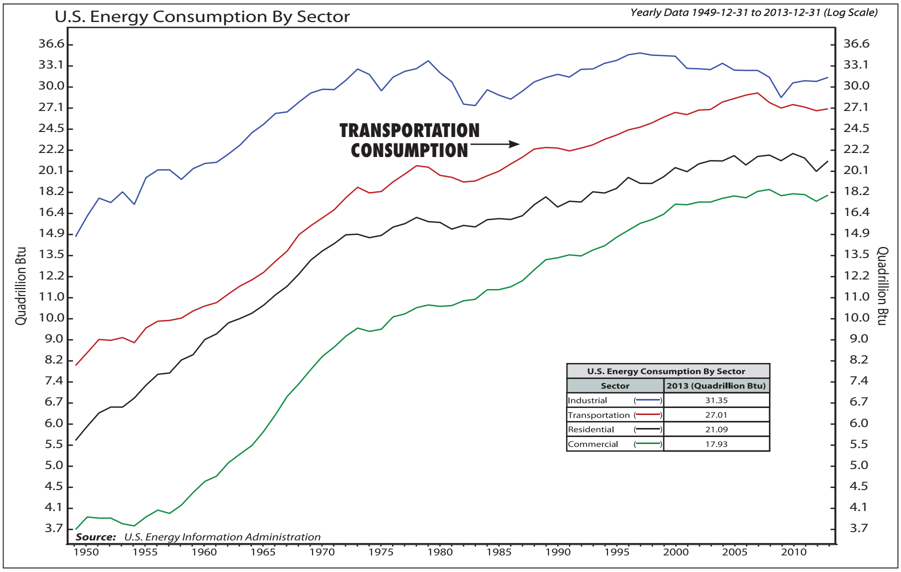
consuming 19.0 million barrels of petroleum a day but only producing 13.9 million. The chart also shows June's production run rate near all-time highs. But even after producing record amounts of oil, the United States is still in the hole by nearly 5.1 million barrels a day. This gap is often overlooked by those who insist that American energy independence is imminent (see Table 7.1 for overall energy consumption versus production). Energy independence is possible, even probable, if U.S. production growth rates are maintained, but it isn't imminent, thanks in large part to the oil gap.

THE THORN IN THE SIDE OF ENERGY INDEPENDENCE—OIL AND TRANSPORTATION

Most of the 97 quads that the United States consumed in 2013 were used by industry (Figure 7.5, blue line) and transportation (red line).



U.S. Energy Consumption By Sector	
Sector	**2013 (Quadrillion Btu)**
Industrial (—)	31.35
Transportation (—)	27.01
Residential (—)	21.09
Commercial (—)	17.93

Source: *U.S. Energy Information Administration*

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FIGURE 7.5 **U.S. ENERGY CONSUMPTION BY SECTOR**

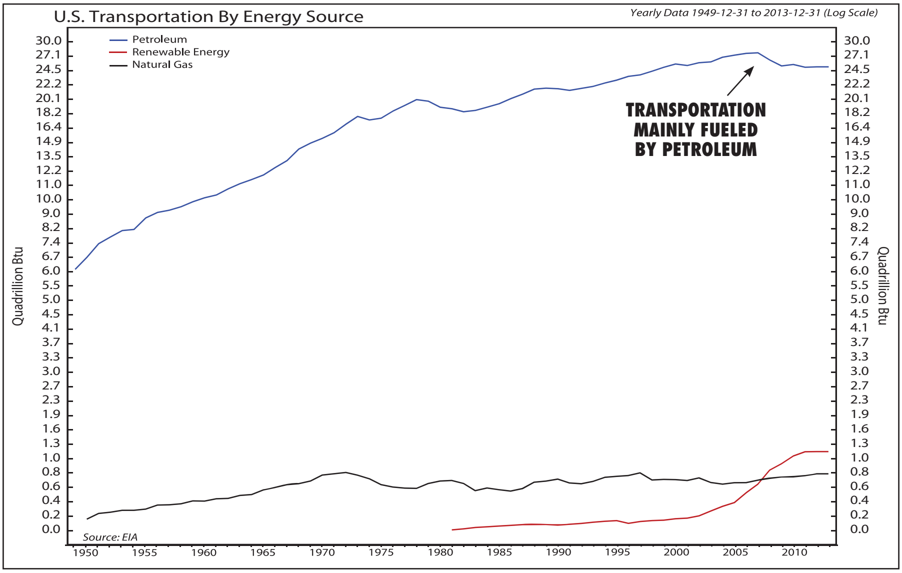

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FIGURE 7.6 **U.S. TRANSPORTATION BY ENERGY SOURCE**

In fact, transportation (which accounts for 27 percent of total energy use) runs almost exclusively on petroleum (see Figure 7.6). Until this changes energy independence will likely remain a fantasy. But there are many ways to solve this problem.

How much oil has been found? The blue bars in Figure 7.7 show that technically recoverable reserves of crude oil have increased by almost 27 percent in the past decade—and most of that growth came after 2008.

While this sounds great for future generations, the reality is not nearly as rosy. The red line shows that the United States has a 52-year supply of oil if it keeps producing at current rates. Put simply, the United States has found more oil but it is also pumping more out of the ground. So while U.S. oil reserves have increased, they aren't necessarily a winning Powerball ticket for future generations.

Crude oil isn't the only petroleum product that the United States is producing more of. In Table 7.2 we see that the United States was producing an average of roughly 12.1 million barrels of petroleum a day during the first five months of 2014—the highest output in 41 years. Crude accounted for 7.44 million barrels of this output; natural gas liquids, 2.56 million

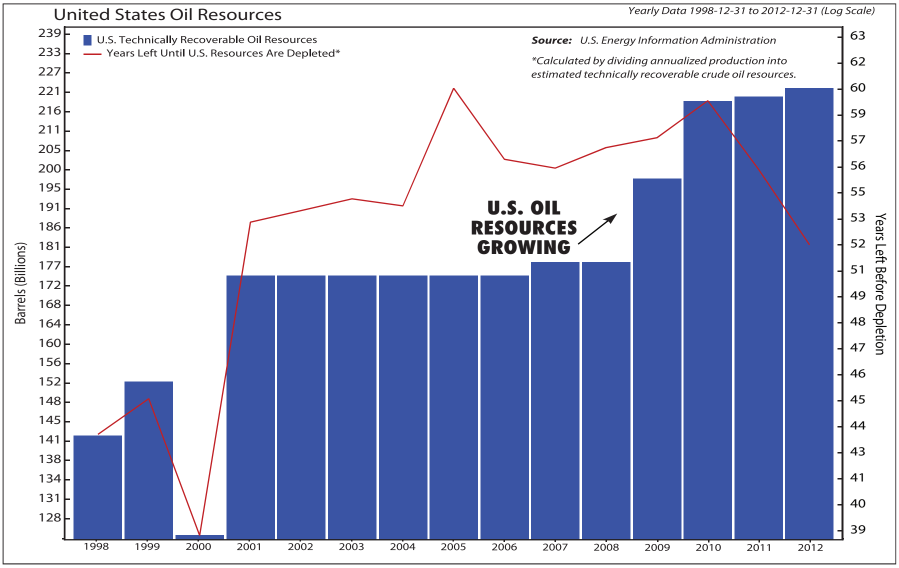

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FIGURE 7.7 U.S. OIL RESOURCES

TABLE 7.2 U.S. PETROLEUM PRODUCTION

U.S. PETROLEUM PRODUCTION					
Year	Crude Oil	Natural Gas Liquids	Renewable Fuels	Processing Gain	Totals
1973	9208	1738	NA	453	11399
1975	8375	1633	NA	460	10468
1980	8597	1573	NA	597	10767
1985	8971	1609	NA	557	11137
1990	7355	1559	NA	683	9597
1995	6560	1762	NA	774	9096
1996	6465	1830	NA	837	9132
1997	6452	1817	NA	850	9119
1998	6252	1759	NA	886	8897
1999	5881	1850	NA	886	8617
2000	5822	1911	NA	948	8681
2001	5801	1868	NA	903	8572
2002	5744	1880	NA	957	8581
2003	5644	1719	NA	974	8337
2004	5435	1809	NA	1051	8295
2005	5186	1717	NA	989	7892
2006	5089	1739	NA	994	7822
2007	5077	1783	NA	996	7856
2008	5000	1784	NA	993	7777
2009	5353	1910	746	979	8988
2010	5479	2074	907	1068	9528
2011	5652	2216	1016	1076	9960
2012	6505	2399	968	1074	10946
2013	7153	2365	892	1060	11470
2014	7443	2556	1002	1102	12103

KEY

2014 is the average of the first five months of the year. Thousands/barrels per day.
Source: EIA.

TOTAL U.S. PETROLEUM PRODUCTION

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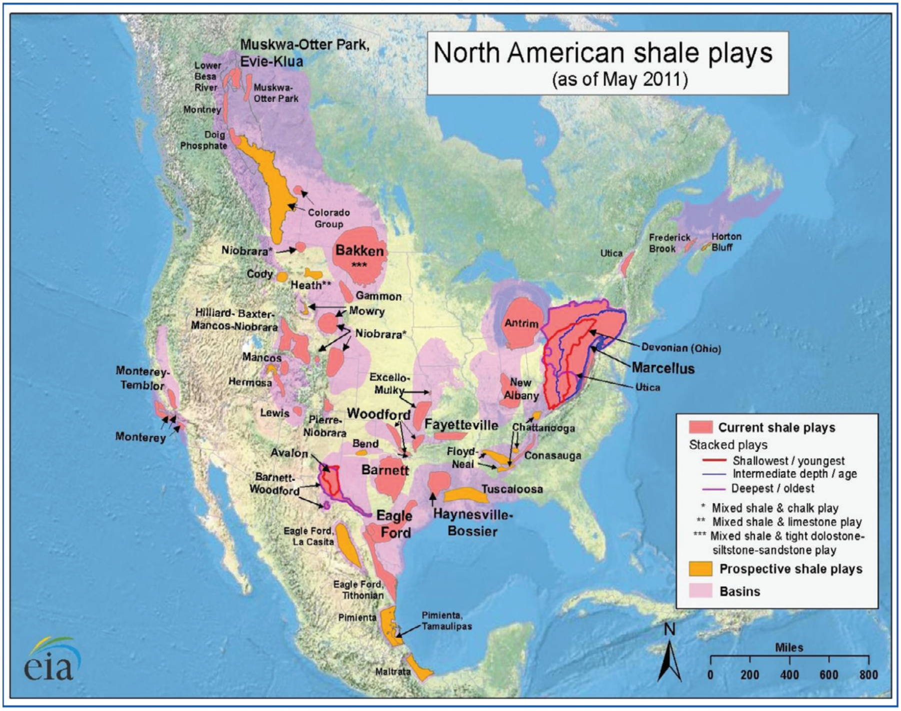
barrels; and renewable fuels, 1.0 million barrels. An additional 1.1 million barrels was created through so-called processing gains—turning some of the petroleum into substances that have greater volume than a barrel of crude. All of these segments have been growing over the past five years.

Let's briefly look at the two key petroleum segments beyond crude oil: natural gas liquids and renewable fuels.

Natural gas liquids are not the same as the dry natural gas used to heat homes and fuel some electric power plants. Natural gas is made up of different molecules, and some are more valuable than others. Because of the value difference, natural gas liquids (butane, propane, etc.), which trade with the oil markets, are separated from dry gas (methane) early in the extraction process. All of this gas, liquid and dry, now mainly comes from unconventional sites—that is, shale deposits (Figure 7.8). However—and importantly

North American shale plays
(as of May 2011)



Source: U.S. Energy Information Administration based on data from various published studies. Canada and Mexico plays from ARI.

FIGURE 7.8 **NORTH AMERICAN SHALE PLAYS, MAY 2011**

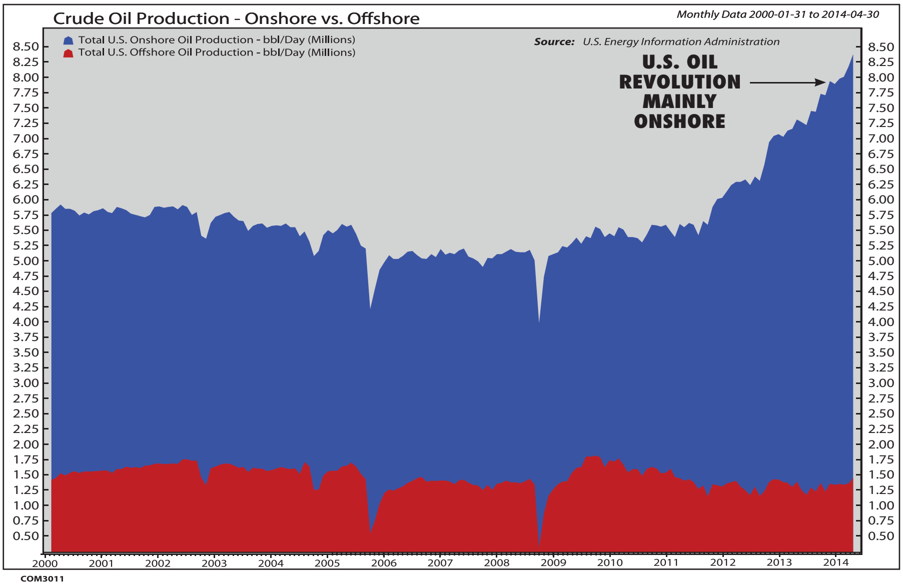


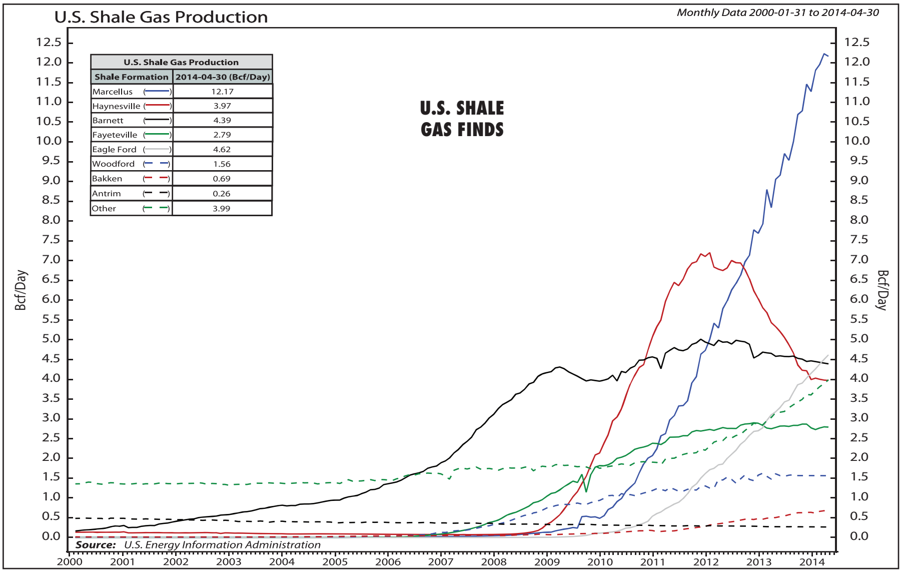
FIGURE 7.9 U.S. CRUDE OIL PRODUCTION, ONSHORE VERSUS OFFSHORE

for hopes of energy independence—natural-gas production of all kinds (conventional and unconventional) still has a large upside potential.

The so-called unconventional revolution is taking place largely onshore—at least in the United States. Figure 7.9 breaks out crude oil production onshore (blue area) versus offshore (red area).

Figure 7.10 highlights total shale gas production in the United States with the top unconventional sites sliced out. In total, shale gas production is 34.4 billion cubic feet (bcf) a day, or 50.6 percent of total natural gas production in the country. Six years ago shale accounted for only 8 percent of production, and five years before that it was barely on the map.

Renewable fuels are another key segment of petroleum, but we are unconvinced about their positive future contribution. Ethanol accounts for roughly 90 percent of this segment and biodiesel the rest (see Figure 7.11). While 900,000 barrels a day of renewable fuels is nothing to scoff at, we question how much higher output can go in the short-term. Ethanol production consumed nearly 5 billion of the 13.9 billion bushels of corn harvested in



U.S. Shale Gas Production

Shale Formation	2014-04-30 (Bcf/Day)
Marcellus (——)	12.17
Haynesville (——)	3.97
Barnett (——)	4.39
Fayetteville (——)	2.79
Eagle Ford (——)	4.62
Woodford (– –)	1.56
Bakken (– –)	0.69
Antrim (– –)	0.26
Other (– –)	3.99

Source: *U.S. Energy Information Administration*

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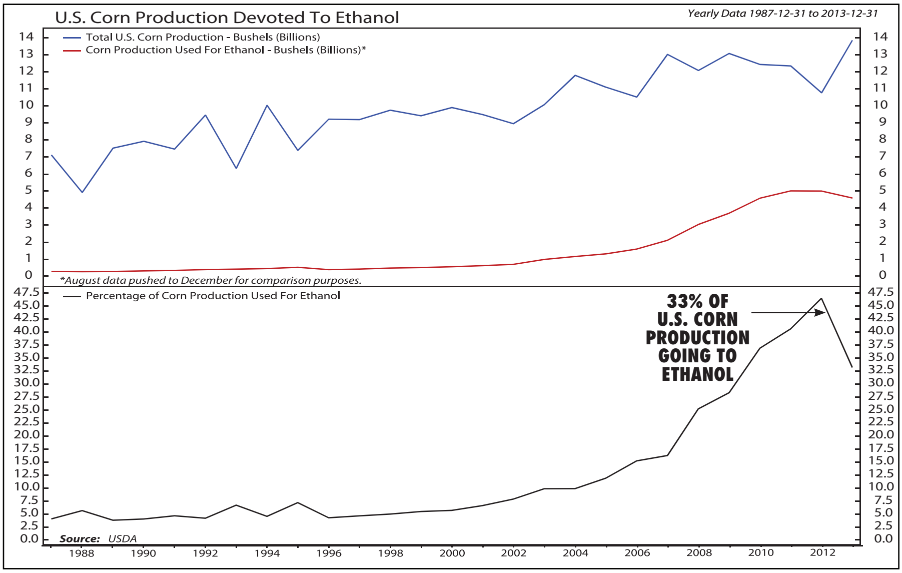
FIGURE 7.10 U.S. SHALE GAS PRODUCTION



*August data pushed to December for comparison purposes.

Source: *USDA*

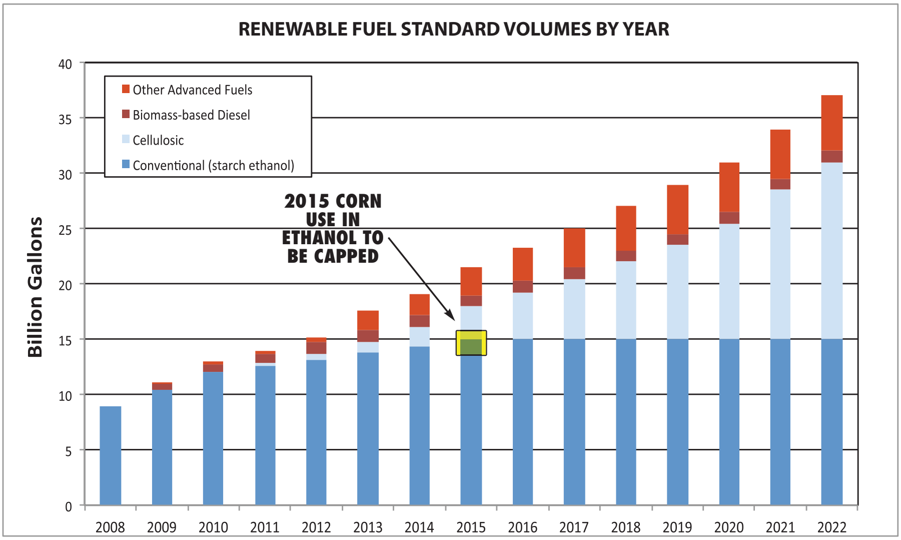
COM3010

FIGURE 7.11 U.S. CORN PRODUCTION DEVOTED TO ETHANOL

the United States in 2012. Does it make sense to turn 33 percent of the nation's corn harvest into vehicle fuel? The answer is no, especially given its energy content. A gallon of ethanol contains only 67 percent of the energy of a gallon of gasoline. Ethanol, however, is a third-rail topic in Washington—smart politicians won't touch it with a 10-foot cornstalk, to avoid riling up the farmers who sell the corn to refiners who blend it into gasoline.

By 2015 ethanol blending maxes out at 15 billion gallons under the Energy Independence and Security Act of 2007 mandates, however—not far from where we are now (see Figure 7.12, darker blue bars). And a cap might be imposed sooner: in late 2013 the EPA proposed a 13 billion gallon maximum.

Our skepticism about renewable fuels, however, is less about corn-based ethanol and more about other forms, particularly cellulosic fuel (see Figure 7.12, lighter blue bars). While cellulosic ethanol is often hyped, we wonder where it will come from. Cellulosic fuel is ethanol from basically anything except corn. The snag is that cellulosic fuels are far from being able to be commercially produced.



Source: EIA Monthly Energy Review, Table 10.3 and 10.4 and the EPA Renewable Fuels Standard EMTS Informational Data.

FIGURE 7.12 **STANDARDS FOR VOLUME OF RENEWABLE FUEL, 2008–2022**

In addition, with the EPA demanding production of an unrealistic amount of blended fuel (which can be unprofitable), refiners have been exporting more (nearly 3.6 million barrels a day)—a threefold jump since 2003 (see Table 7.3). In the end, both gross and net petroleum import numbers are shrinking, which is a good thing for energy independence. But the United States could be that much closer to independence if its refiners were incentivized to keep more of their products at home.

TABLE 7.3 U.S. PETROLEUM TRADE

U.S. PETROLEUM TRADE

Year	Imports	Exports	Net Imports
1973	6256	231	6025
1975	6056	209	5846
1980	6909	544	6365
1985	5067	781	4286
1990	8018	857	7161
1995	8835	949	7886
1996	9478	981	8498
1997	10162	1003	9158
1998	10708	945	9764
1999	10852	940	9912
2000	11459	1040	10419
2001	11871	971	10900
2002	11530	984	10546
2003	12264	1027	11238
2004	13145	1048	12097
2005	13714	1165	12549
2006	13707	1317	12390
2007	13468	1433	12036
2008	12915	1802	11114
2009	11691	2024	9667
2010	11793	2353	9441
2011	11504	2986	8518
2012	10598	3205	7393
2013	9794	3594	6200
2014	9290	3598	5692

KEY

**2014 is the average of the first five months of the year. Thousands/barrels per day.*
Source: EIA.

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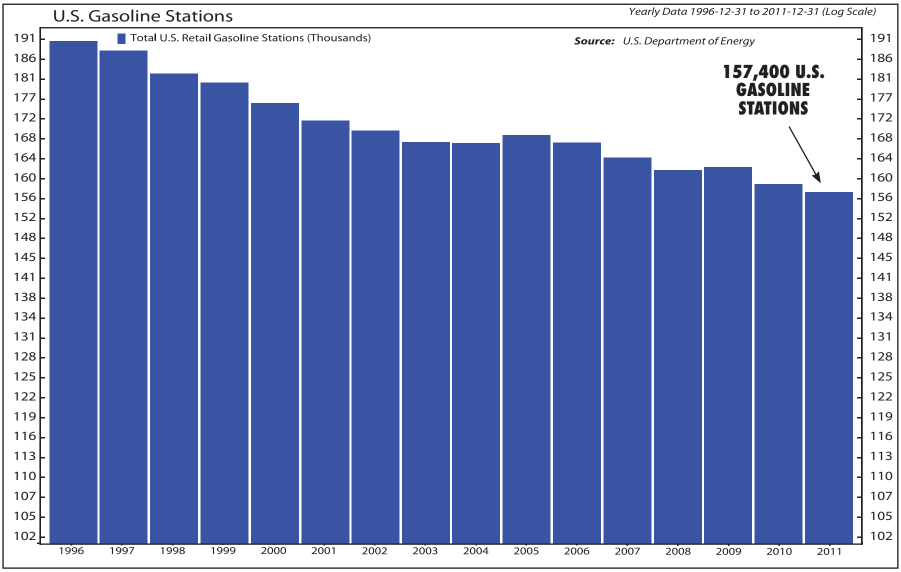
U.S. PETROLEUM IMPORTS **U.S. PETROLEUM EXPORTS** **NET IMPORTS**

Given all that we've discussed so far, what's the best way to ensure that America becomes energy independent? The answer—and some of the context it must be put in—might surprise you.

Let's begin by examining the nation's fueling infrastructure. The United States currently has about 157,400 retail gasoline stations, as shown in Figure 7.13. The total has been shrinking for years because of consolidation and the rise of newer and larger supercenter stations.

Based on published estimates, alternative fueling stations appear to be cutting severely into the turf of retail gasoline stations, but the picture is a bit of a mirage. By the end of 2013, 27,000 alternative stations supposedly were operating, up from only 7,000 in 2010. But these numbers are inflated. First, the official electric stats count each electric outlet as a station (the solid blue line in Figure 7.14). So if a station can handle four vehicles, that station is officially counted as four stations. This is like counting each gasoline pump as an entire gas station. In addition, in many states, municipalities are the heaviest users of vehicles powered by natural gas, electricity, or other unconventional fuels, but their refueling stations are not available to the public.



Source: U.S. Department of Energy

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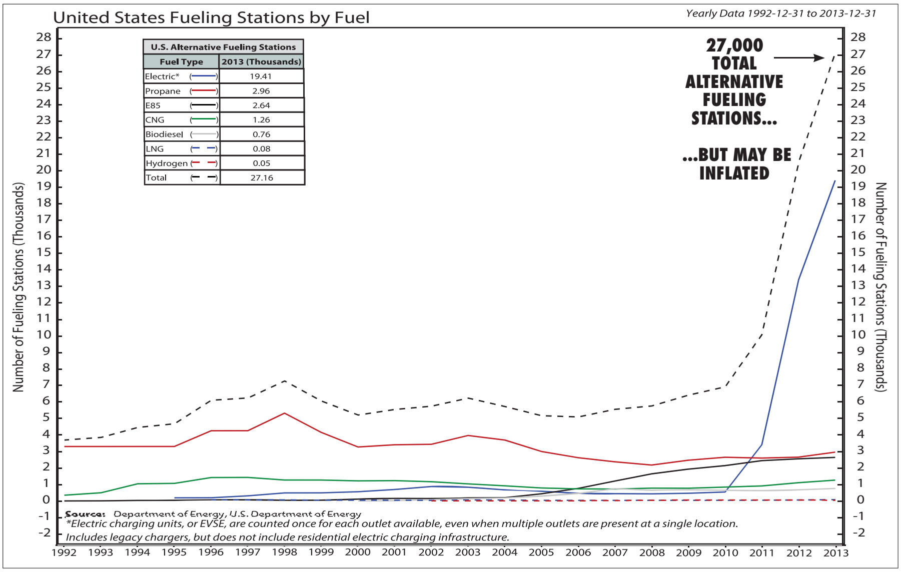
FIGURE 7.13 **U.S. GASOLINE STATIONS**


United States Fueling Stations by Fuel

Yearly Data 1992-12-31 to 2013-12-31

U.S. Alternative Fueling Stations	
Fuel Type	**2013 (Thousands)**
Electric*	19.41
Propane	2.96
E85	2.64
CNG	1.26
Biodiesel	0.76
LNG	0.08
Hydrogen	0.05
Total	27.16

27,000 TOTAL ALTERNATIVE FUELING STATIONS...

...BUT MAY BE INFLATED

Source: Department of Energy, U.S. Department of Energy

*Electric charging units, or EVSE, are counted once for each outlet available, even when multiple outlets are present at a single location. Includes legacy chargers, but does not include residential electric charging infrastructure.

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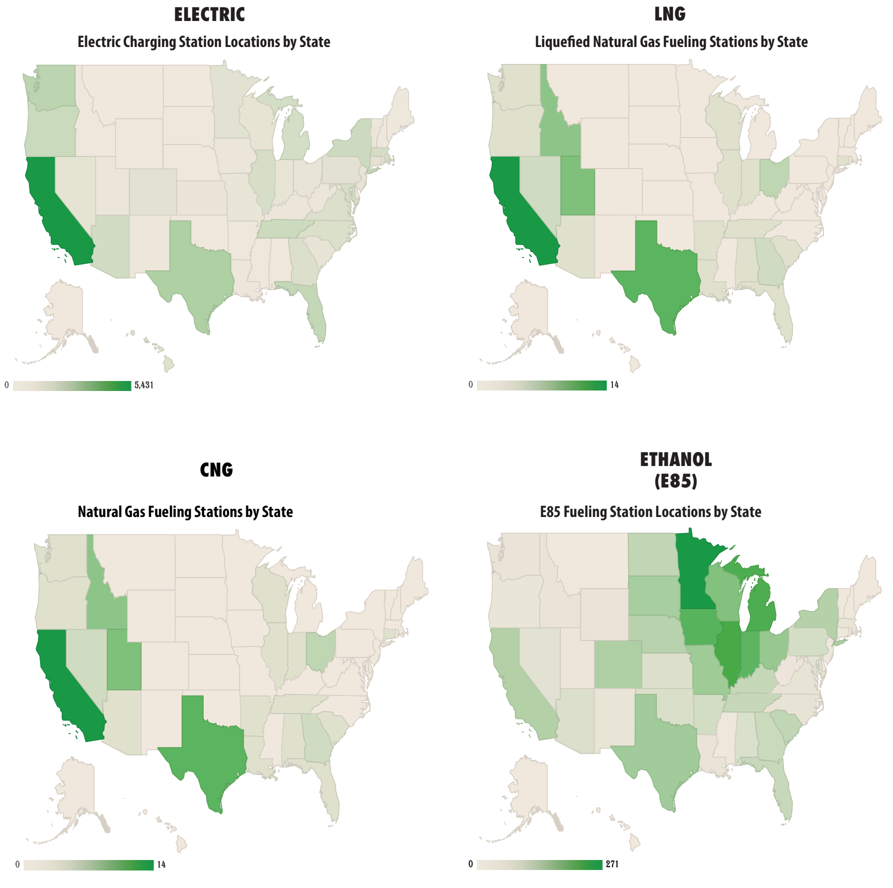
FIGURE 7.14 **U.S. FUELING STATIONS BY TYPE OF FUEL SOLD**

Indeed, accessibility is a large impediment to wide adoption of alternative fuel cars and trucks. To keep this argument tight, we'll limit our analysis to the fuels that seem to have the most potential upside: electricity, liquefied natural gas (LNG), compressed natural gas (CNG), and E85 (ethanol).

Figure 7.15 features four maps created by the Alternative Fuels Data Center at the DOE that detail state-by-state counts of alternative-fuel stations that are open to retail motorists (you and me). The darkest green shading means a state has the most stations in the country for that particular fuel. Under each map in Figure 7.15 is a scale that ranges from the lowest number of fueling stations to the highest in each of the 50 states. For example, California is the darkest state (the one with the most stations) for electricity (1,878), LNG (14), and CNG (154). In comparison, the Golden State has 10,200 retail gasoline stations. The alternative infrastructure still has a long way to go.

The value of counting alternative-fuel stations is questionable. Even though only 1,878 of California's electric-car recharging stations are accessible to the public, the official outlet tally is 5,470. And that number, in turn, goes into the 27,000 national total mentioned earlier. Remember, too, that these figures are for individual charging slots, not necessarily individual


ELECTRIC
Electric Charging Station Locations by State

LNG
Liquefied Natural Gas Fueling Stations by State

CNG
Natural Gas Fueling Stations by State

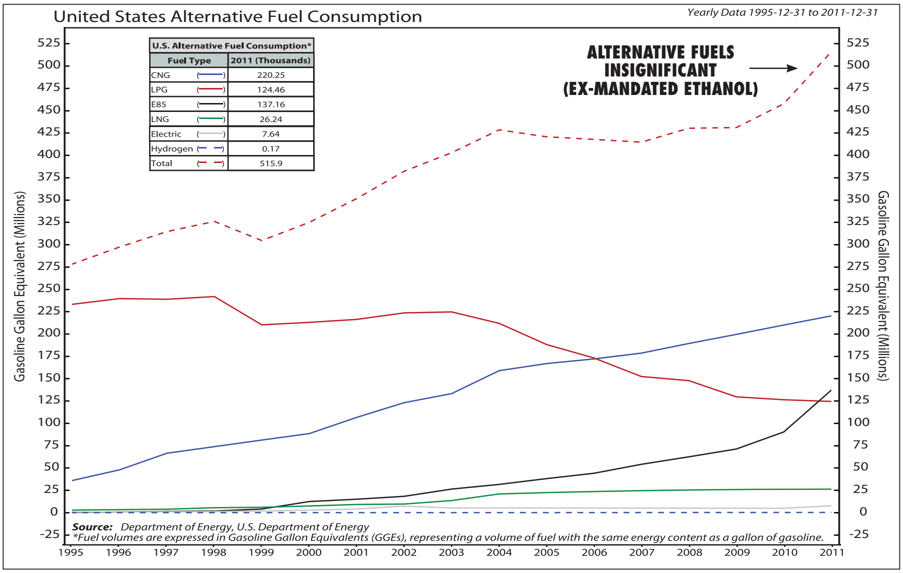
ETHANOL (E85)
E85 Fueling Station Locations by State

Source: AFDC Alternative Fueling Station Locator Data

FIGURE 7.15 **STATE-BY-STATE MAPS OF ELECTRIC, LNG, CNG, AND ETHANOL FUELING STATIONS**

rest stops. And, in any case, if you buy a plug-in car, your home will be the charging station you use most often.

A better way of assessing alternative fuels' potential impact on energy independence is through total fuel consumption (see Figure 7.16 and Table 7.4). The stats in Table 7.4 compare consumption of vehicle fuels from each energy source in thousands of gasoline gallon equivalents (GGEs). In the grand scheme of things, most alternative fuels are insignificant. Government-mandated ethanol is an exception, but as we stated earlier, expanding its use will be difficult.



Source: Department of Energy, U.S. Department of Energy

*Fuel volumes are expressed in Gasoline Gallon Equivalents (GGEs), representing a volume of fuel with the same energy content as a gallon of gasoline.

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FIGURE 7.16 U.S. ALTERNATIVE FUEL CONSUMPTION

TABLE 7.4 ESTIMATED CONSUMPTION OF VEHICLE FUELS IN THOUSANDS OF GGES BY FUEL TYPE, 2007–2011

ESTIMATED CONSUMPTION OF VEHICLE FUELS IN THOUSAND GASOLINE EQUIVALENT GALLONS, BY FUEL TYPE, 2007 - 2011

Fuel Type	2007	2008	2009	2010	2011
Alternative Fuels					
Compressed Natural Gas	178,565	189,358	199,513	210,007	220,247
Electricity	5,037	5,050	4,956	4,847	7,635
Ethanol, 85 percent[1]	54,091	62,464	71,213	90,323	137,165
Hydrogen	66	117	140	152	174
Liquefied Natural Gas	24,594	25,554	25,652	26,072	26,242
Liquefied Petroleum Gas	152,360	147,784	129,631	126,354	124,457
Other Fuels[2]	2	2	2	-	-
Alternative Fuels Total	**414,715**	**430,329**	**431,107**	**457,755**	**515,920**
Replacement Fuels[3]					
Biodiesel	367,764	324,329	334,809[R]	270,107[R]	910,968
Ethanol in Gasohol	4,694,304	6,442,781	7,343,133	8,527,431	8,563,841
Replacement Fuels Total	**5,062,068**	**6,767,110**	**7,677,942[R]**	**8,797,538[R]**	**9,474,809**
Traditional Fuels Used On-Highway					
Gasoline[4]	140,646,000	134,644,492	134,385,175	134,686,678	130,597,071
Diesel[4]	44,533,000	41,434,412	37,701,896	39,319,551	39,929,843
Traditional Fuels Total	**185,179,000**	**176,078,904**	**172,087,071**	**174,006,229**	**170,526,914**
Total Vehicle Fuel Consumption[5] (Alternative plus Traditional Fuels)	**185,593,715**	**176,509,233**	**172,518,178**	**174,463,984**	**171,042,834**

ALT FUELS

MANDATED ETHANOL + BIO

TOTAL FUEL USE

*[1] The remaining portion of 85-percent ethanol is gasoline. Consumption data include the gasoline portion of the fuel. [2] May include P-Series fuel or any other fuel designated by the Secretary of Energy as an alternative fuel under the Energy Policy Act of 1992. [3] A replacement fuel is the portion of any motor fuel that is methanol, ethanol, or other alcohols, natural gas, liquefied petroleum gases, hydrogen, coal-derived liquid fuels, electricity (including electricity from solar energy), ethers, biodiesel, or any other fuel the Secretary of Energy determines, by rule, is substantially not petroleum and would yield substantial energy security benefits and substantial environmental benefits. MTBE and Other Oxygenates are no longer published in this table. Highway use was assumed to be zero after 2006, since U.S. refineries and blenders voluntarily discontinued the use of MTBE in highway gasoline in mid-2006. [4] Gasoline consumption includes ethanol in gasohol. Diesel includes biodiesel. [5] Total fuel consumption is the sum of alternative fuel, gasoline, and diesel consumption. Biodiesel is included in diesel consumption. **Notes**: Fuel quantities are expressed in a common base unit of gasoline-equivalent gallons to allow comparisons of different fuel types. Gasoline-equivalent gallons do not represent gasoline displacement. R = Revised. **Sources:** Unless otherwise noted, volume data are obtained from the U.S. Energy Information Administration, Office of Energy Consumption and Efficiency Statistics and converted to gasoline-gallon equivalents using higher heating values for each fuel. Biodiesel: U.S. Energy Information Administration, Monthly Energy Review January 2012, Table A3. Gasoline and Ethanol Higher Heating Values: U.S. Energy Information Administration, Monthly Energy Review January 2012, Table A3. Ethanol: U.S. Energy Information Administration, Monthly Energy Review, January 2012, Table A3. Diesel Higher Heating Value: Annual Energy Outlook 2011, Table G1.*

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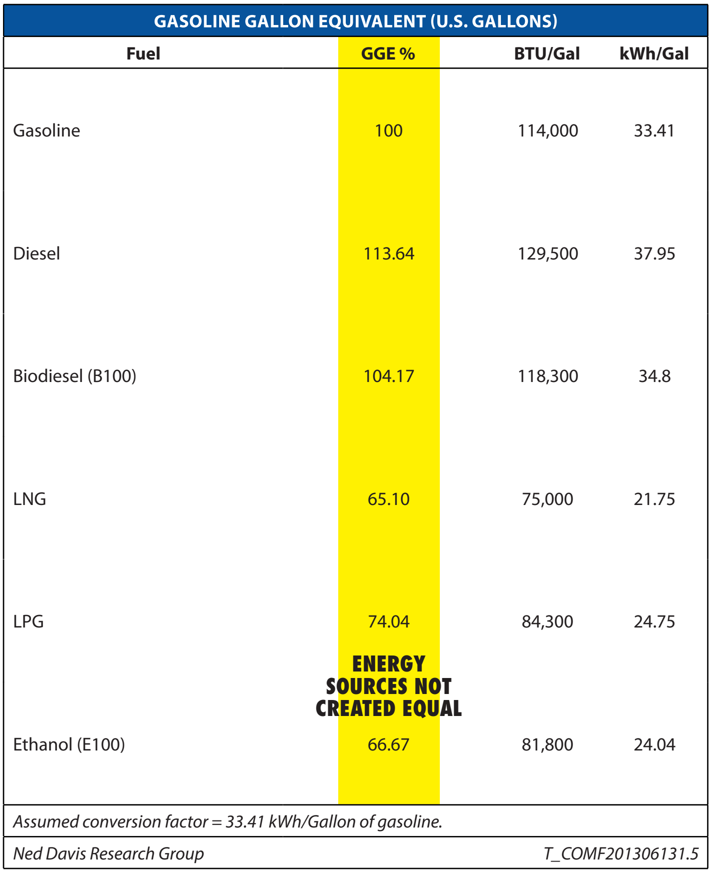
CHOOSING THE RIGHT FUEL

All energy sources are not created equal. To compare them accurately we use the aforementioned GGE, which shows how much of a fuel is needed to produce the energy in one gallon of gasoline (see Table 7.5).

Figure 7.17 displays the energy density of various fuels. It also shows why gasoline and diesel fuel, both carbon-heavy, remain the world's go-to energy sources for cars, buses, and trucks, despite their potentially harmful impact on climate. A major reason is economics. Gasoline and diesel fuel

TABLE 7.5 **GASOLINE GALLON EQUIVALENTS (U.S. GALLONS)**



GASOLINE GALLON EQUIVALENT (U.S. GALLONS)

Fuel	GGE %	BTU/Gal	kWh/Gal
Gasoline	100	114,000	33.41
Diesel	113.64	129,500	37.95
Biodiesel (B100)	104.17	118,300	34.8
LNG	65.10	75,000	21.75
LPG	74.04	84,300	24.75
Ethanol (E100)	66.67	81,800	24.04

ENERGY SOURCES NOT CREATED EQUAL

Assumed conversion factor = 33.41 kWh/Gallon of gasoline.

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Few transportation fuels surpass the energy densities of gasoline and diesel

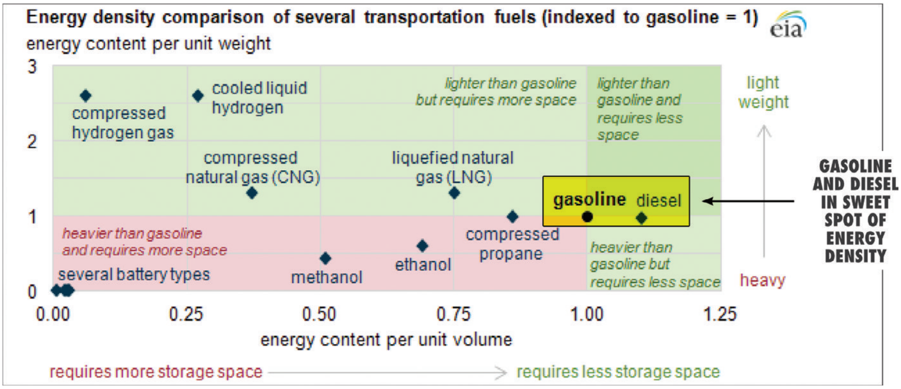
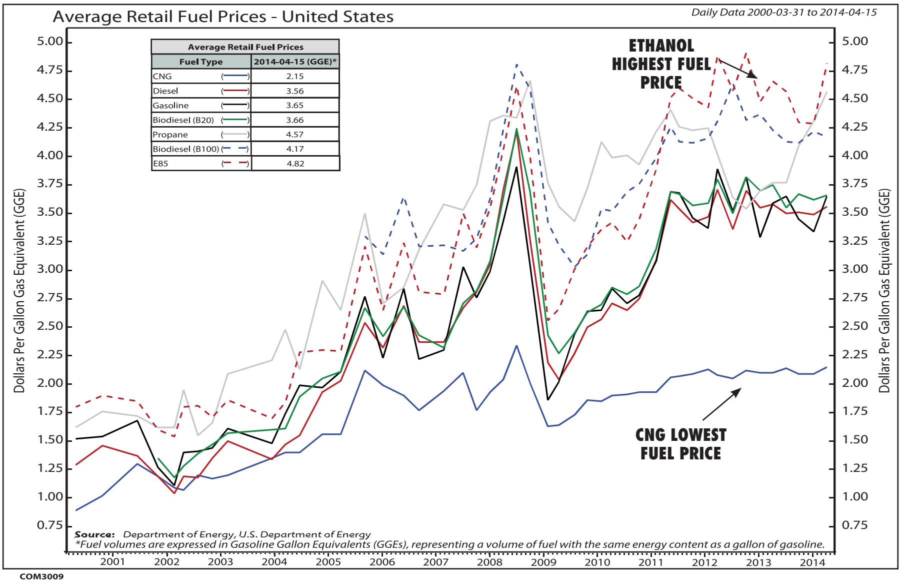


FIGURE 7.17 **ENERGY DENSITY COMPARISON OF VARIOUS TRANSPORTATION FUELS (GASOLINE = 1)**

offer great bang for the buck, weigh relatively little, and require less storage space than some alternatives (the intersection between the red and the green highlighted areas on the chart).

As of 2014, the highest cost fuel is ethanol while the least expensive is compressed natural gas (see Figure 7.18). Consumers have been slow to adopt CNG due to its lower energy density. To travel the same



Source: Department of Energy, U.S. Department of Energy
*Fuel volumes are expressed in Gasoline Gallon Equivalents (GGEs), representing a volume of fuel with the same energy content as a gallon of gasoline.

FIGURE 7.18 **U.S. AVERAGE RETAIL FUEL PRICES**

distance, vehicles using it would require a fuel tank larger than its gasoline-powered counterpart. CNG also tends to have higher up-front infrastructure costs.

Figure 7.18 does not include electricity but it is an important part of the mix. One gallon of gasoline equals roughly 33.4 kilowatt hours of electricity. At my home in Sarasota, Florida, every kWh I use costs roughly 11 cents. If I bought an electric car and plugged it in at the house, my cost in gasoline terms would equal roughly $3.67 a gallon. Looking only at fuel costs, however, doesn't paint a true picture of the total impact of alternative fuels on energy independence. The key point: greater use of electricity could drastically reduce the amount of energy that the United States consumes (see Table 7.6).

TABLE 7.6 ELECTRICITY COSTS FOR 1 GGE

ELECTRICITY COSTS FOR 1 GGE

For Local Rate Per kWh	$/Gallon Equivalent
$0.07	$2.34
$0.08	$2.67
$0.09	$3
$0.10	$3.34
$0.11	$3.67
$0.12	$4.00
$0.13	$4.34
$0.14	$4.67
$0.15	$5.01
$0.16	$5.34
$0.17	$5.68
$0.18	$6.01
$0.19	$6.35
$0.20	$6.68
$0.25	$8.35
$0.27	$9.02
$0.28	$9.35
$0.29	$9.69
$0.30	$10.02

WHAT ELECTRIC FUEL COSTS ME IN SARASOTA

Assumed conversion factor = 33.41 kWh/Gallon of gasoline.

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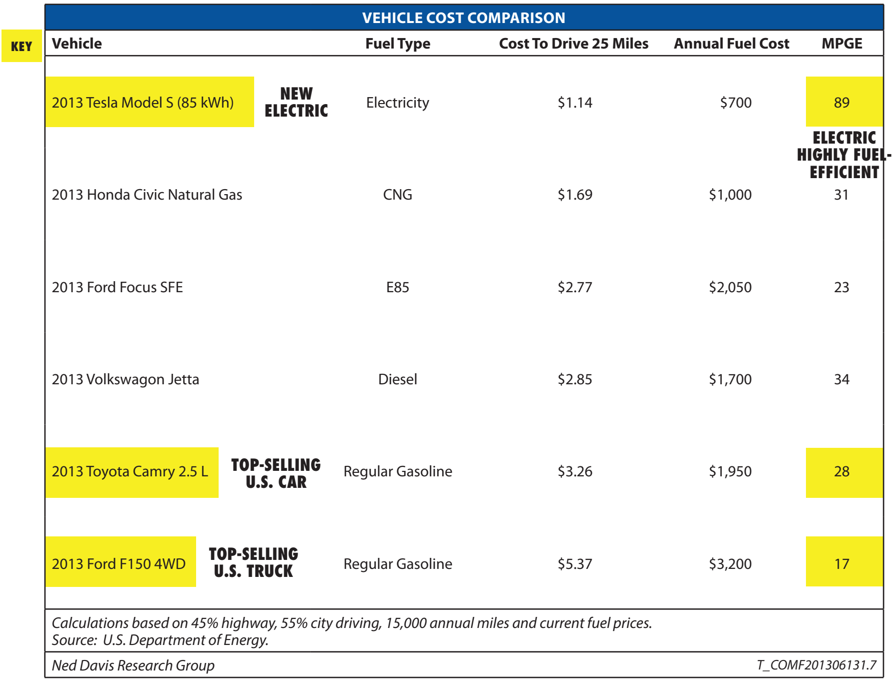
WHY ELECTRIC COULD BE A GAME-CHANGER

Electricity (batteries) ranked dead last on the energy density chart (Figure 7.17). It also ranked second to last on the alternative-fuels consumption chart (Figure 7.16). Don't let this fool you. This form of power is a major winner in the alternatives race. Energy independence bulls should gleefully watch the progress of electric-car maker Tesla Motors (TSLA).

Figures 7.17 and 7.18 show which energy sources offer the best bang for the buck but do not capture two important points—how far you can travel on that unit of energy (gallon of gasoline, gallon of ethanol, gallon of electric equivalent, etc.), and the overall cost of the trip. The answers to these two questions indicate why electricity could be a game-changer.

To capture these differences the Environmental Protection Agency (EPA) adopted another metric: MPGE, or miles per gallon equivalent. This basically calculates how far you can travel on the electric equivalent of a gallon of gasoline. Table 7.7 from the DOE compares the MPGE for

TABLE 7.7 **VEHICLE COST COMPARISON**



VEHICLE COST COMPARISON

KEY

Vehicle	Fuel Type	Cost To Drive 25 Miles	Annual Fuel Cost	MPGE
2013 Tesla Model S (85 kWh) **NEW ELECTRIC**	Electricity	$1.14	$700	89 **ELECTRIC HIGHLY FUEL-EFFICIENT**
2013 Honda Civic Natural Gas	CNG	$1.69	$1,000	31
2013 Ford Focus SFE	E85	$2.77	$2,050	23
2013 Volkswagen Jetta	Diesel	$2.85	$1,700	34
2013 Toyota Camry 2.5 L **TOP-SELLING U.S. CAR**	Regular Gasoline	$3.26	$1,950	28
2013 Ford F150 4WD **TOP-SELLING U.S. TRUCK**	Regular Gasoline	$5.37	$3,200	17

Calculations based on 45% highway, 55% city driving, 15,000 annual miles and current fuel prices.
Source: U.S. Department of Energy.

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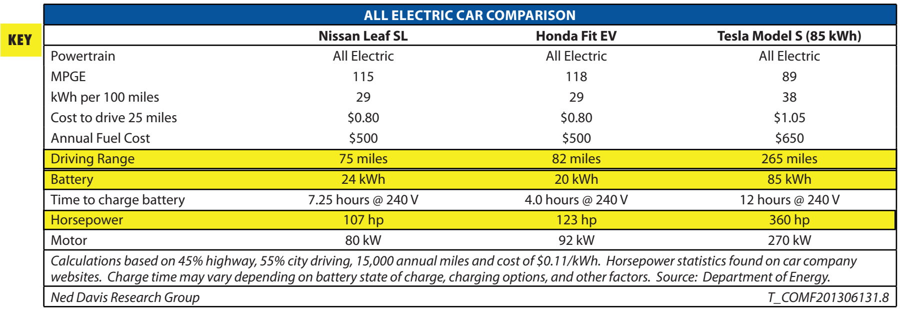
different vehicles and fuel costs. From this perspective electricity is head and shoulders above the rest.

Why Electric Has Yet to Take Off

Until recent developments on the part of Tesla Motors, the overall consumer experience in electric has been underwhelming, as shown in Table 7.8. Car design differences can play a major role in how far you can go, the cost of the trip, and the overall experience (range, power, battery size, time to charge, trade-in value, comfort, acceleration, etc.). The Nissan Leaf and the Tesla Model S are both electric vehicles, but they do not deliver the same experience. The Model S' driving range alone (three to four times that of the most popular electric vehicles) has allowed Tesla to attract customers who have never before been in the market for an electric vehicle. (Maybe even Ned, as we'll show shortly).

If the overall electric experience is improved its impact on energy independence could be gigantic. Figure 7.19 shows that according to the Federal Highway Administration (FHA), in the 12 months ending December 2013 over 2.9 trillion miles were logged by U.S. vehicles, and 90 percent of that came from smaller vehicles. The average fuel economy of light-duty vehicles was approximately 20.4 miles per gallon in 2010. Fuel economy of the average electric vehicle today is roughly 100 MPGE according to the EPA. In other words, if the United States ran its small vehicles entirely on electric power it would use only one-fifth of the energy vehicles now require. The same cannot be said of other alternative-energy sources. With

TABLE 7.8 **ALL-ELECTRIC CAR COMPARISON**



KEY

ALL ELECTRIC CAR COMPARISON

	Nissan Leaf SL	Honda Fit EV	Tesla Model S (85 kWh)
Powertrain	All Electric	All Electric	All Electric
MPGE	115	118	89
kWh per 100 miles	29	29	38
Cost to drive 25 miles	$0.80	$0.80	$1.05
Annual Fuel Cost	$500	$500	$650
Driving Range	75 miles	82 miles	265 miles
Battery	24 kWh	20 kWh	85 kWh
Time to charge battery	7.25 hours @ 240 V	4.0 hours @ 240 V	12 hours @ 240 V
Horsepower	107 hp	123 hp	360 hp
Motor	80 kW	92 kW	270 kW

Calculations based on 45% highway, 55% city driving, 15,000 annual miles and cost of $0.11/kWh. Horsepower statistics found on car company websites. Charge time may vary depending on battery state of charge, charging options, and other factors. Source: Department of Energy.

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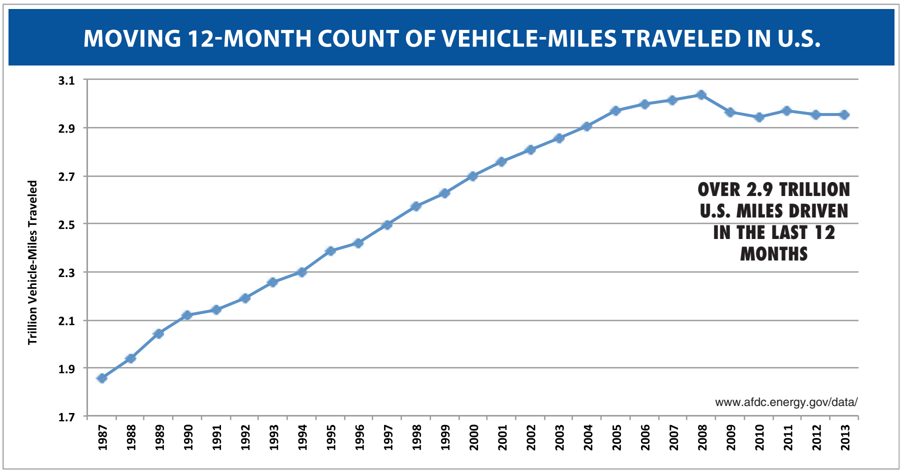

MOVING 12-MONTH COUNT OF VEHICLE-MILES TRAVELED IN U.S.

OVER 2.9 TRILLION U.S. MILES DRIVEN IN THE LAST 12 MONTHS

Source: Federal Highway Administration
Notes: VMT counts include those of light-, medium-, and heavy-duty vehicles.

FIGURE 7.19 **MOVING 12-MONTH COUNT OF U.S. VEHICLE-MILES TRAVELED**

electric cars (such as the Tesla Model S) offering an experience more in line with what consumers are accustomed to from gasoline-powered vehicles, electric could change the energy independence landscape.

How Far Ned Could Go

To help digest what all this means, we've included a real-world example based on how far Ned could drive, and the cost, if he sold his 2012 Lexus LS 460L and bought a Tesla Model S (85 kWh). Based on what Ned would be saving in his new Tesla, I'll be asking for a raise if he actually buys one.

Ned's Lexus has a 22.2-gallon tank, and according to the EPA it gets 18 miles to the gallon on average. The range on his Lexus amounts to roughly 400 miles. With his Lexus, Ned could leave his house in Osprey, Florida, and travel to Savannah, Georgia, on a full tank of gas (Figure 7.20, black line). At $3.67 a gallon it would cost him $81.50.

The range on the Tesla Model S (85 kWh), according to the EPA, is only 265 miles (although the company claims closer to 290). Assuming Ned could find a charging station somewhere in the middle of his

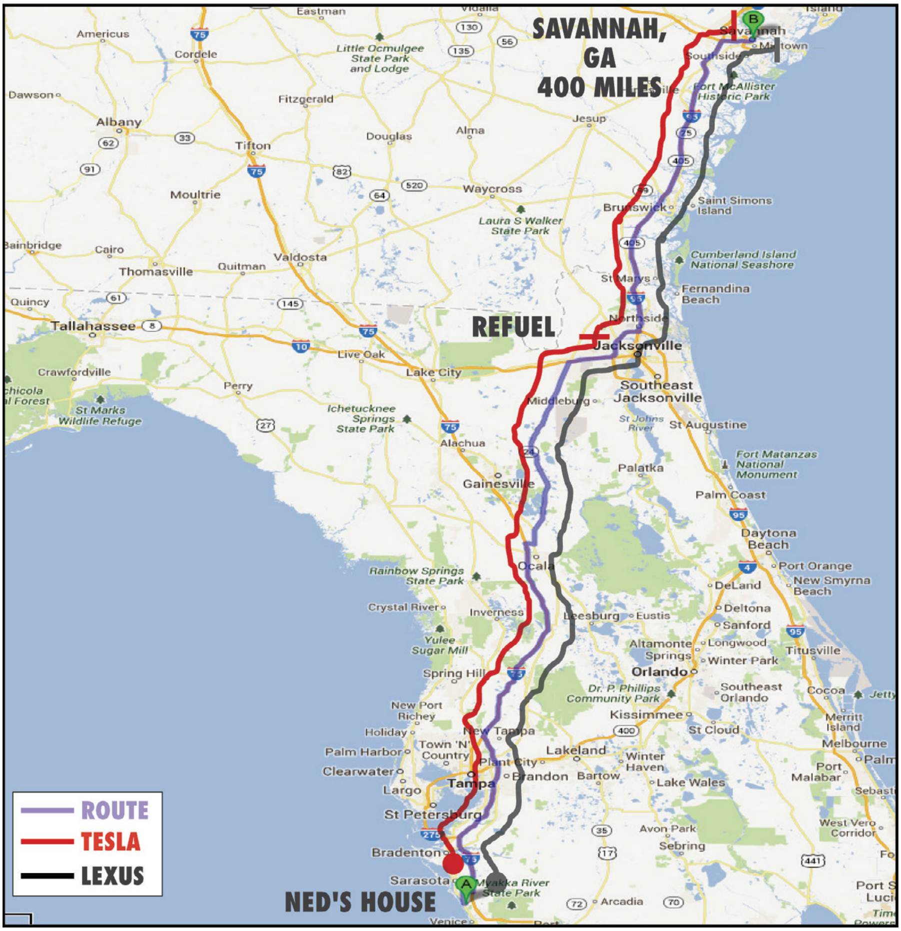

FIGURE 7.20 **DRIVING FROM NED'S HOUSE TO SAVANNAH, GEORGIA: LEXUS VERSUS TESLA**

journey at a cost similar to what he is charged at his house—11 cents per kWh—a 400-mile trip would cost only $16.80. Lexus fill-up = $81.50, Tesla = $16.80.

Based just on fueling cost the Tesla is a no-brainer, but of course that is not the only consideration. The Lexus gives Ned more range due to its larger fuel storage capacity, access to hundreds of gasoline stations, and shorter refueling times. The EPA has the Tesla Model S (85 kWh) taking 12 hours to charge at a 240-volt outlet (Table 7.8). For perspective, a regular outlet in your home is likely pushing 120 volts. (Charging times continue to hinder electric adoption. So do electric vehicles' generally higher price tags compared to conventional cars, but that difference should shrink, or even disappear, as electrics become more popular and battery technology improves.)

Tesla is trying to shorten charge times by placing supersized charging stations across the United States. The company claims a 20-minute charge at one of these stations translates into 200 miles of travel. On top of that, Tesla owners fill up for free. The trick is to find one of Tesla's charging stations, but we suspect that this will not be a problem in three to five years. If Tesla plunks a charging station down in Sarasota, Florida (hint, hint, Elon Musk!), yearly fuel costs for Ned could rival the shampoo costs in our company gym.

Not that we need to turn this into the Tesla show, but the company has made enough strides in convenience for motorists that the buzz around electric cars may actually be warranted. Again, we'll use Ned as an example. Figure 7.21 shows Ned using three different electric cars traveling to an Orlando Magic basketball game 143 miles away from his home. Without extra charges, the Honda (green line) and Nissan (blue line) electric vehicles would strand Ned in Plant City—about 63 miles short of his destination. The Tesla Model S (red line) would have enough battery life to get Ned to the game and almost all of the way back.

NAT GAS—AN INDIRECT PLAY ON ELECTRIC

Another reason electric vehicles have a serious shot at fostering U.S. energy independence is that their owners' homes can be used as fueling stations. That's an infrastructure advantage not shared by cars and trucks powered by natural (nat) gas, a more volatile fuel available only at facilities equipped to dispense it safely. As shown in Figure 7.15, fewer than 1,400 natural gas stations (LNG and CNG) exist in the United States, and increasing the total would be expensive. The nation's transportation infrastructure is not set up for natural gas, so the notion that fresh shale gas discoveries will soon translate into U.S. energy independence is a dangerous fib. As Figure 7.22 shows (yellow line above green section), only 0.02 percent of the 23.4 trillion

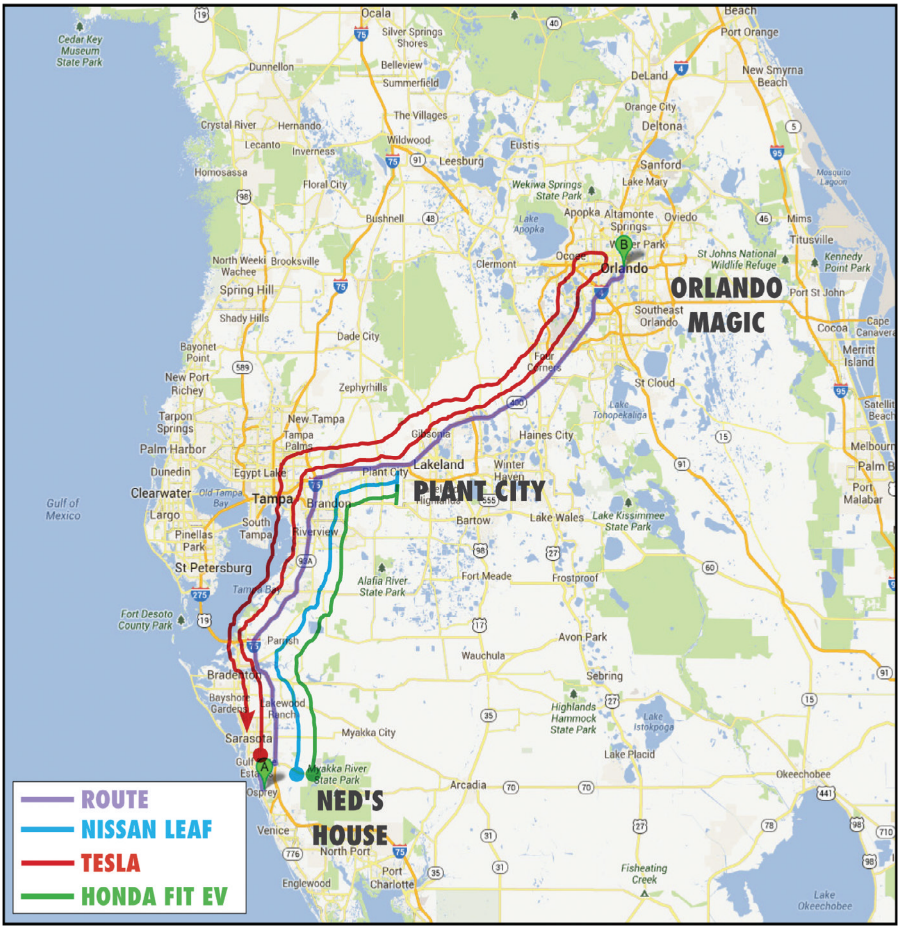

FIGURE 7.21 **DRIVING FROM NED'S HOUSE TO ORLANDO MAGIC GAME: TESLA MODEL S VERSUS THE FIT AND THE LEAF**

cubic feet (Tcf) of natural gas the United States consumed last year directly powered vehicles.

How about the future for nat gas in vehicles? Significant future demand is expected. According to projections from the EIA, vehicles will be consuming over 1.0 quadrillion Btus by the year 2040 (see Figure 7.23). Heavy trucks (blue section) and buses (red section) will make up the majority of the demand.

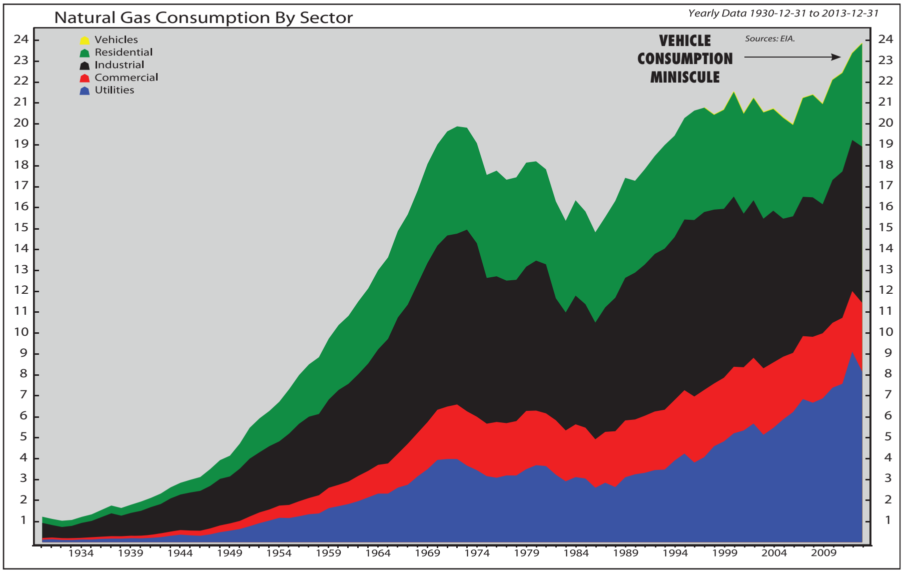

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FIGURE 7.22 **NATURAL GAS CONSUMPTION BY SECTOR**

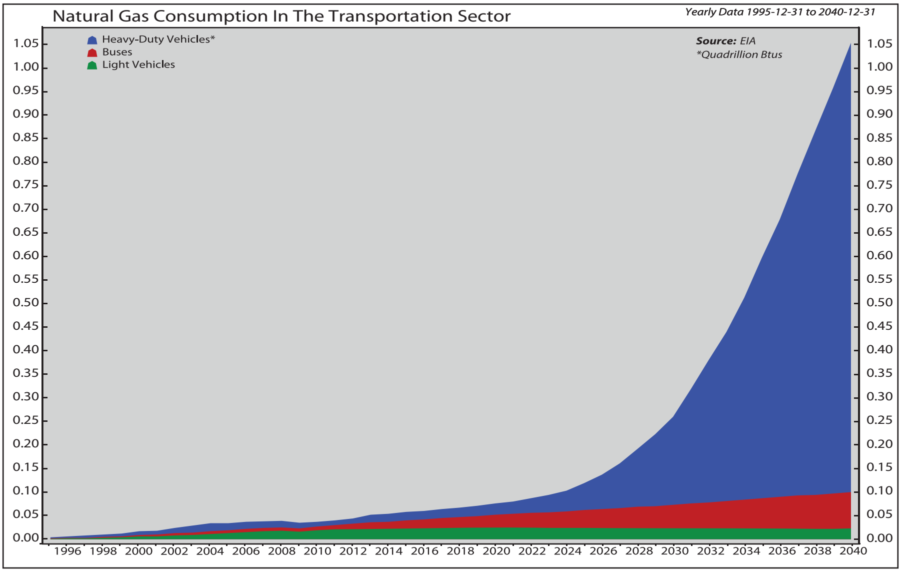

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FIGURE 7.23 **NATURAL GAS CONSUMPTION IN THE TRANSPORTATION SECTOR**

The steep curve in the chart looks dramatic; however, perspective is needed. Recall from earlier in this chapter that the United States consumed over 23 quadrillion Btus of natural gas in 2013. So if all goes according to this chart, vehicles will account for a little over 4 percent of consumption 26 years from now. And that's assuming that overall consumption doesn't rise, which it likely will (even the chart says it will). Heavy trucks and buses should have an impact on future nat gas consumption, but not likely to the grand extent often hyped.

But if electric vehicles do gain traction, natural-gas demand will rise because utilities will need to generate more electricity. Natural gas is the second-largest source of fuel for U.S. electric-power production (see Figure 7.24). It is a cleaner fuel source than the current number one (coal) and that has helped it capture by far the largest share of new electric generating capacity in recent years.

How much natural gas is used by utilities in the short term will be largely dictated by its cost relative to coal. Figure 7.25 highlights the coal/

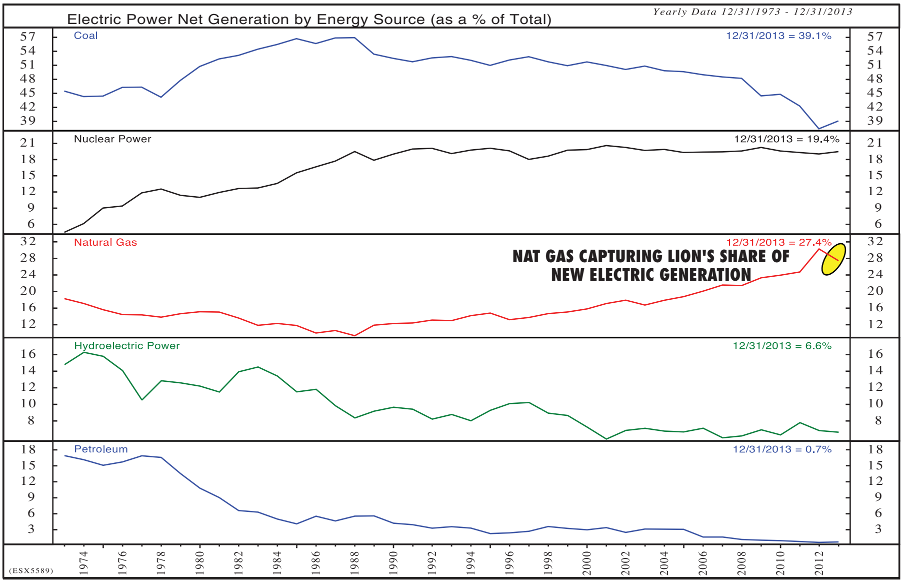


FIGURE 7.24 ELECTRIC POWER NET GENERATION BY ENERGY SOURCE (AS A PERCENTAGE OF TOTAL)

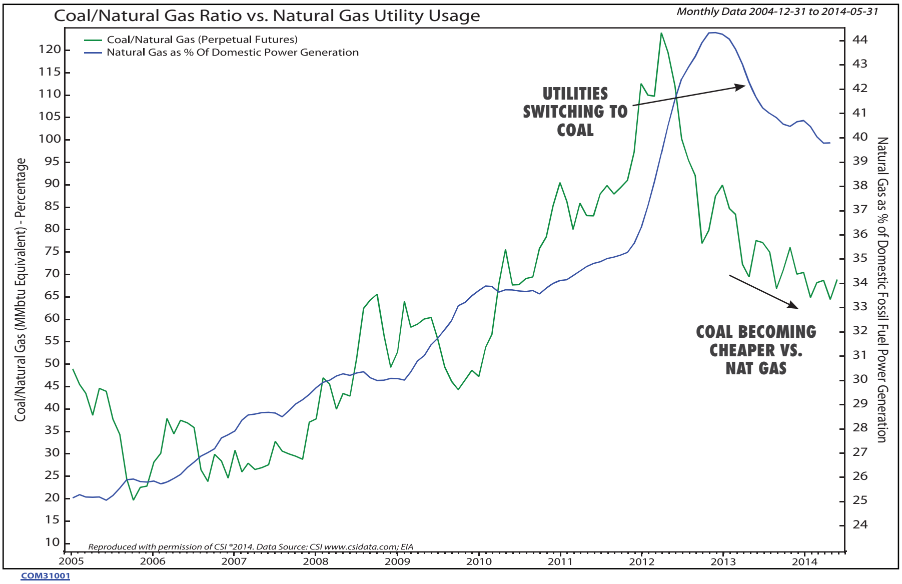


FIGURE 7.25 COAL/NATURAL GAS RATIO VERSUS NATURAL GAS UTILITY USAGE

natural gas ratio (green line) and the percentage of domestic power generation driven by natural gas (blue line). A falling ratio means that coal is becoming cheaper versus natural gas, which can lead to utilities burning more coal. The opposite is true when the ratio is rising. But keep in mind that this is a short-term look. Figure 7.24 clearly outlines falling coal usage on a long-term basis.

Another positive for future natural gas use, should electric vehicles capture more market share, would be the need for added generating capacity at electric utilities. As of March 2014 capacity utilization was at 83.0 percent nationally, one of its lowest levels in 46 years (see Figure 7.26).

While we are on the topic of natural gas let's answer a question that frequently pops up: Is the United States the Saudi Arabia of natural gas? Yes, it appears that way.

Figure 7.27 represents the oil reserves claimed by Saudi Arabia, which amount to 267 billion barrels (blue bars), and the number of

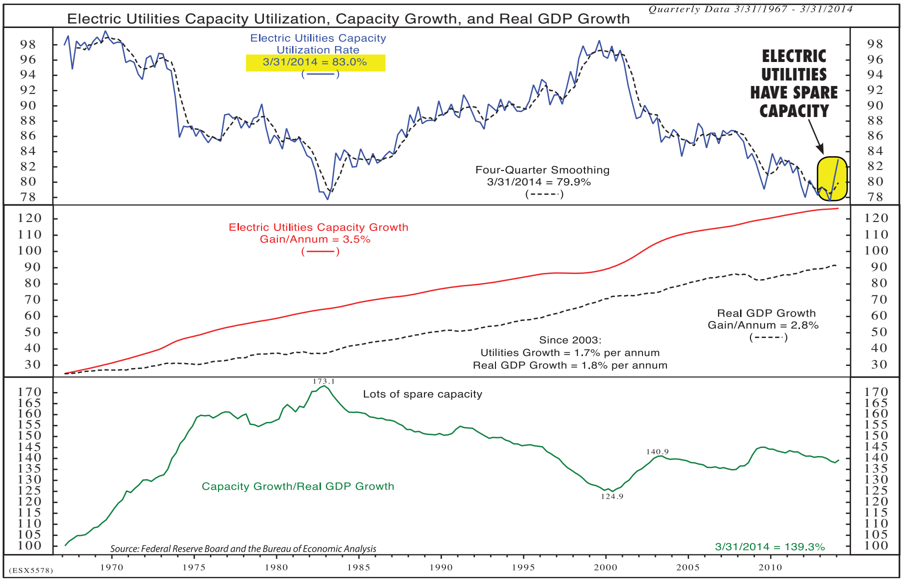


FIGURE 7.26 **ELECTRIC UTILITIES CAPACITY UTILIZATION, CAPACITY GROWTH, AND REAL GDP GROWTH**

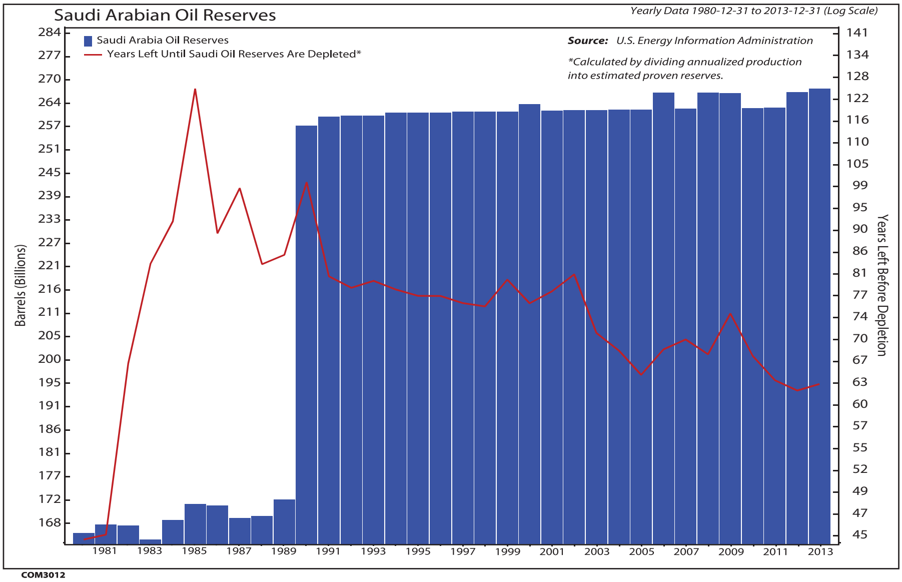
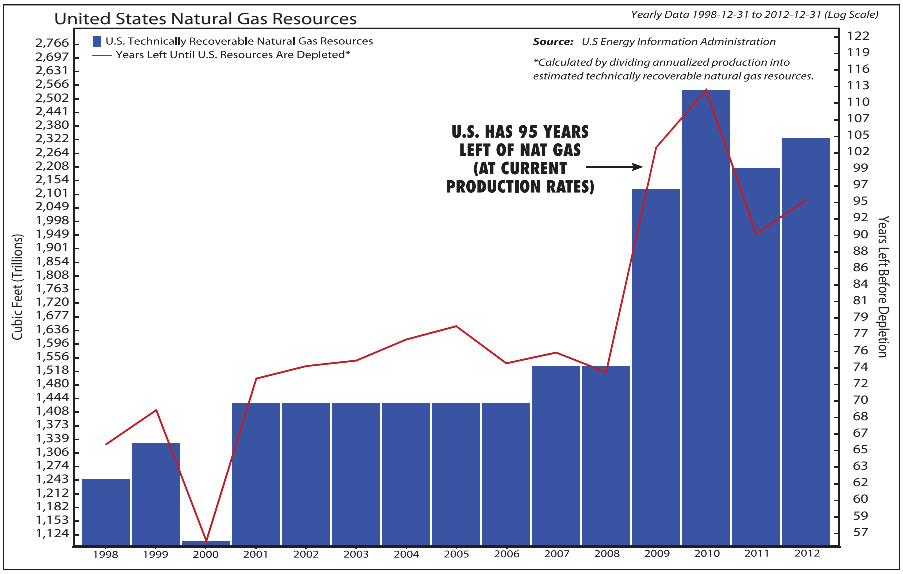


FIGURE 7.27 **SAUDI ARABIAN OIL RESERVES**


United States Natural Gas Resources

Yearly Data 1998-12-31 to 2012-12-31 (Log Scale)

Source: U.S Energy Information Administration

*Calculated by dividing annualized production into estimated technically recoverable natural gas resources.

U.S. HAS 95 YEARS LEFT OF NAT GAS (AT CURRENT PRODUCTION RATES)

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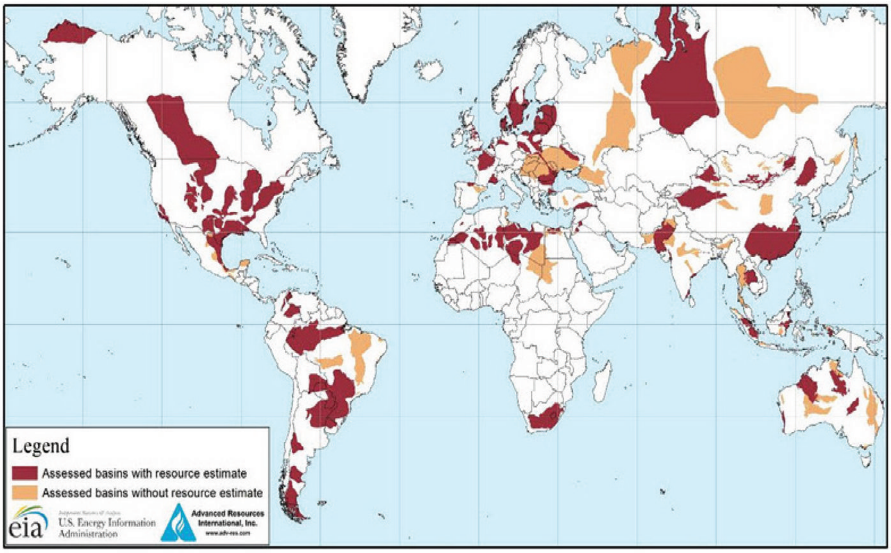
FIGURE 7.28 **U.S. NATURAL GAS RESOURCES**

years left for those reserves should the kingdom continue producing oil at its current rate of 11.5 million barrels a day (red line). Based on current production rates and no increases in reserves, Saudi Arabia has 63 years of oil left. We compare these stats to U.S. natural gas reserves in Figure 7.28.

The Saudi reserves are considered proven, while the U.S. natural gas reserves shown in Figure 7.28 are based on *technically recoverable* resources. Proven reserves have a better probability of being available. Still, the United States has about 95 years left of natural gas based on current production rates. So, yes, the United States could be considered the Saudi Arabia of natural gas.

Americans should be aware, however, that U.S. natural gas is not the only gas in town. The map in Figure 7.29 (from the EIA) includes other prospective shale gas basins worldwide. The red areas correspond to those

Map of basins with assessed shale oil and shale gas formations, as of May 2013


Legend
🟥 Assessed basins with resource estimate
🟧 Assessed basins without resource estimate
eia
Independent Statistics & Analysis
U.S. Energy Information Administration
Advanced Resources International, Inc.
www.adv-res.com

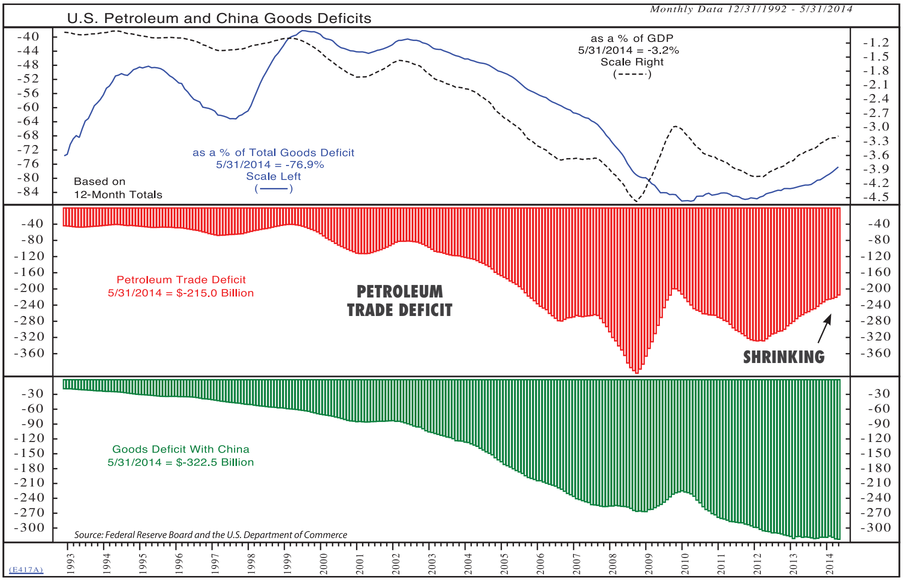
Source: United States basins from U.S. Energy Information Administration and United States Geological Survey; other basins from ARI based on data from various published studies.

FIGURE 7.29 **MAP OF BASINS WITH ASSESSED SHALE OIL AND SHALE GAS FORMATIONS, MAY 2013**

basins that were given a resource estimate. In total, the EIA estimates that these red areas could amount to 22,900 trillion cubic feet (Tcf) of technically recoverable resources, 2,400 Tcf of which is from the United States.

The Immediate Impact of Abundant U.S. Energy Resources

As to the precise route the United States takes with its energy consumption and production, the choice is complex. To paraphrase famed energy author Daniel Yergin, the choice involves energy security, physical safety, economics, the environment, carbon and climate change, values and public safety, and reliability.



Source: Federal Reserve Board and the U.S. Department of Commerce

FIGURE 7.30 U.S. PETROLEUM AND CHINA GOODS DEFICITS

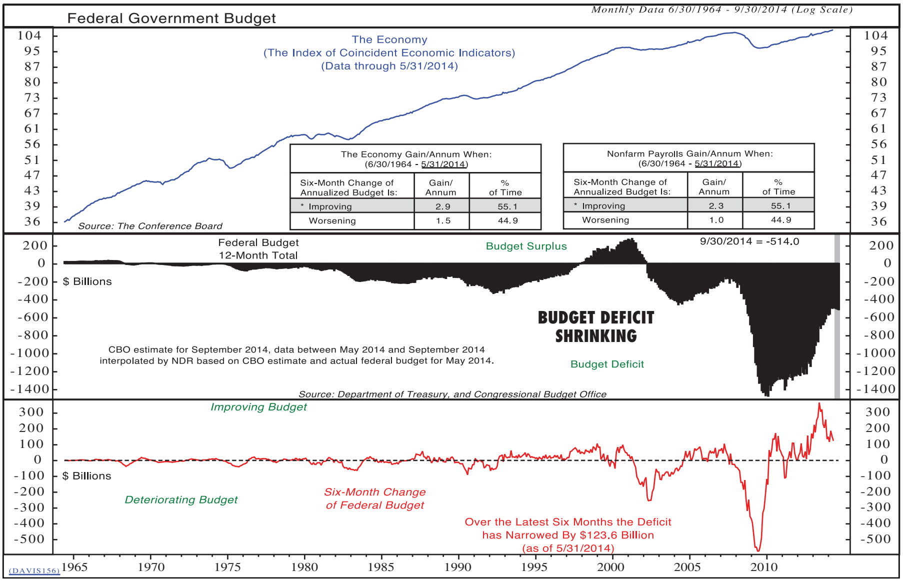
What is not too complex to evaluate is the impact additional U.S. resources have already had on the U.S. economy. The U.S. trade balance, which had been worsening for the better part of 33 years, has started to reverse course. This is due almost exclusively to a narrowing petroleum deficit (see Figure 7.30).

Oil and gas revenue have also helped improve the U.S. budget deficit, as extra oil and natural gas production has padded tax revenues (see Figure 7.31).

The improved budget appears to be having a positive influence on the U.S. dollar, as history would have predicted (see Figure 7.32).

New unconventional energy finds are a key reason why we believe the United States may be staging a manufacturing comeback (see Figure 7.33).

Chemical companies comprise over 15 percent of U.S. manufacturing activity, the largest single industry in the manufacturing sector. Lower



The Economy Gain/Annum When:
(6/30/1964 - 5/31/2014)

Six-Month Change of Annualized Budget Is:	Gain/ Annum	% of Time
* Improving	2.9	55.1
Worsening	1.5	44.9

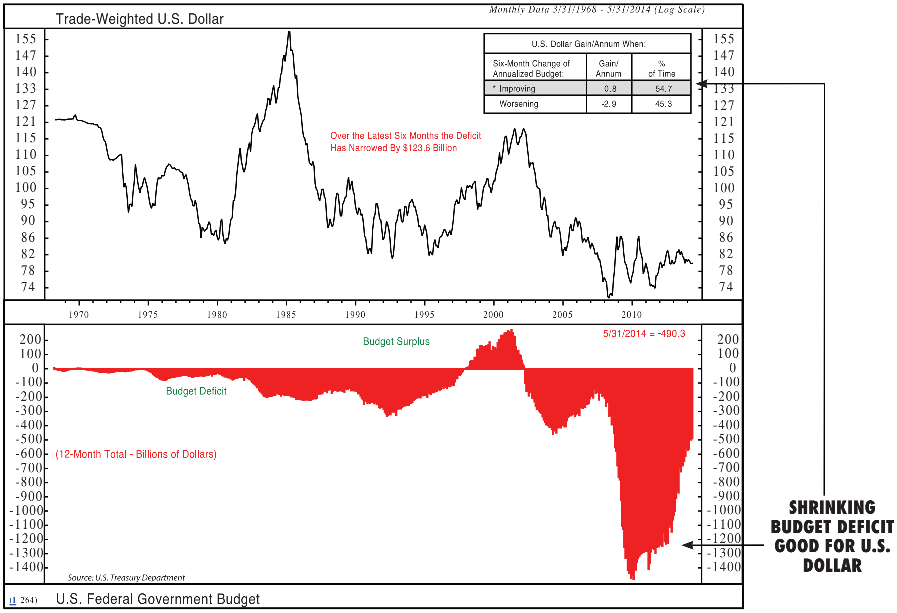
Nonfarm Payrolls Gain/Annum When:
(6/30/1964 - 5/31/2014)

Six-Month Change of Annualized Budget Is:	Gain/ Annum	% of Time
* Improving	2.3	55.1
Worsening	1.0	44.9

CBO estimate for September 2014, data between May 2014 and September 2014 interpolated by NDR based on CBO estimate and actual federal budget for May 2014.

Over the Latest Six Months the Deficit has Narrowed By $123.6 Billion (as of 5/31/2014)

FIGURE 7.31 **FEDERAL GOVERNMENT BUDGET**



U.S. Dollar Gain/Annum When:

Six-Month Change of Annualized Budget:	Gain/ Annum	% of Time
* Improving	0.8	54.7
Worsening	-2.9	45.3

Over the Latest Six Months the Deficit Has Narrowed By $123.6 Billion

FIGURE 7.32 ***TOP*, TRADE-WEIGHTED U.S. DOLLAR; *BOTTOM*, U.S. FEDERAL GOVERNMENT BUDGET**

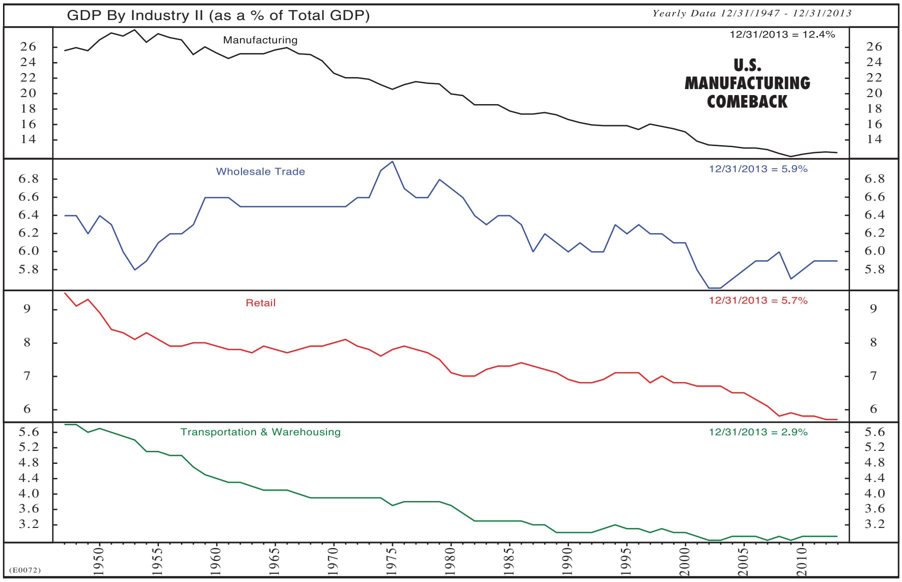


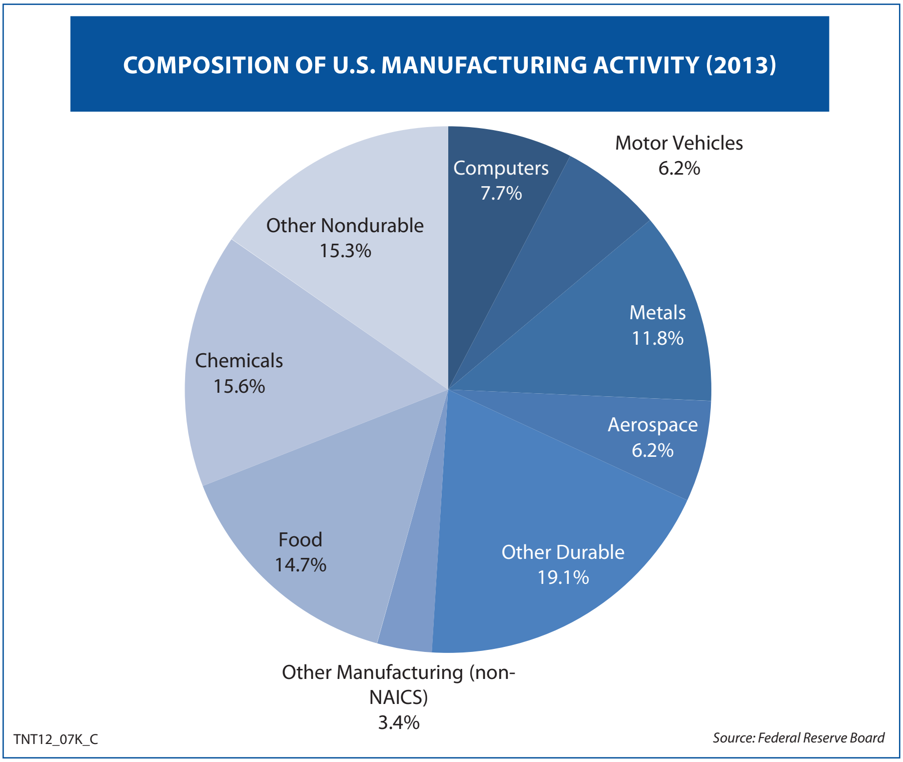
FIGURE 7.33 **GDP BY INDUSTRY AS A PERCENTAGE OF TOTAL GDP**

energy costs, especially for natural gas, should keep U.S. manufacturing competitive, even with a stronger dollar (see Figure 7.34).

Is natural gas really that much cheaper in the United States than in the rest of the world? Yes. U.S. manufacturers that use natural gas as a feedstock have a sizeable advantage over most of their global competitors. Figure 7.35 shows LNG prices worldwide as of November 2013. LNG is the frozen version of dry natural gas. Freezing condenses the gas, allowing more to be put inside a container, thus reducing shipping costs.

A POTENTIAL HEADACHE FOR THE U.S. MANUFACTURING RESURGENCE

Natural gas in the United States is effectively a landlocked commodity, which is why the price disparity is so great. As of 2014 the United States



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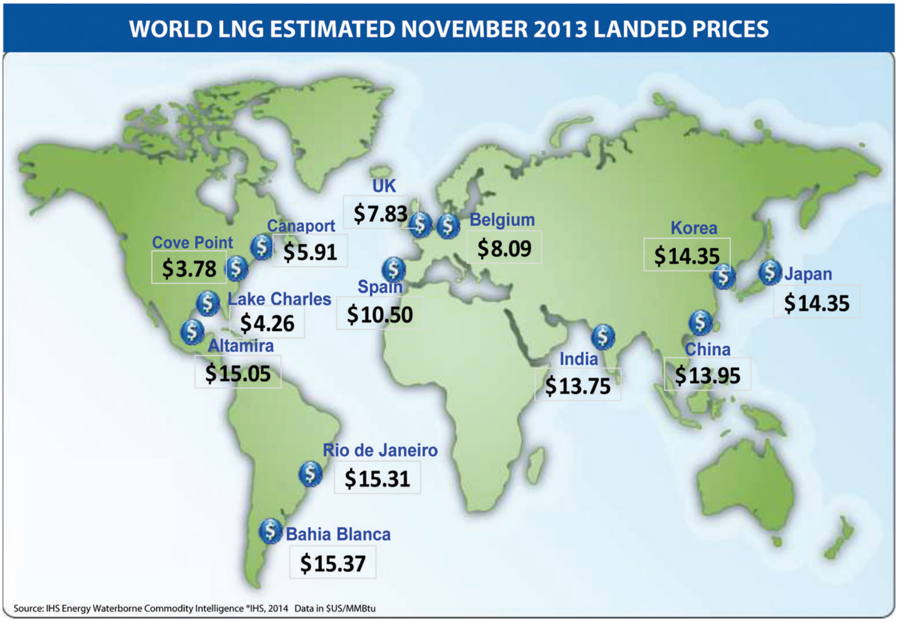
Source: Federal Reserve Board

FIGURE 7.34 **COMPOSITION OF U.S. MANUFACTURING ACTIVITY, 2013**

did not have even one large LNG export facility. This will change, however, since the Department of Energy (DOE) has authorized four new major exporting facilities, the first of which is expected to be in service starting in the fourth quarter of 2015.

LNG exports could stunt the U.S. manufacturing renaissance by boosting domestic prices toward the global level. We do not expect the price gap to close overnight, and it probably will never disappear entirely, but we do expect it to shrink. Roughly 10.2 percent of daily natural gas production in the United States will be exported by the first four facilities once they are fully functional (see Table 7.9). The DOE is currently reviewing 23 other export applications. If all were approved (quite unlikely), nearly 57 percent



Source: IHS Energy Waterborne Commodity Intelligence ®IHS, 2014 Data in $US/MMBtu

FIGURE 7.35 WORLD LNG ESTIMATED NOVEMBER 2013 LANDED PRICES

TABLE 7.9 POTENTIAL LNG EXPORT BOOM

POTENTIAL LNG EXPORT BOOM

Export Facility	**Export Capacity**	**% of Total Domestic Production**
Approved Sabine Pass Liquefaction, LLC	2.2 bcf/d	3.2%
Other Approvals	4.8 bcf/d	7.0%
Pending Approvals	30.7 bcf/d	44.7%
Total Potential LNG Export Capacity	39.3 bcf/d	57.2%

Source: DOE.

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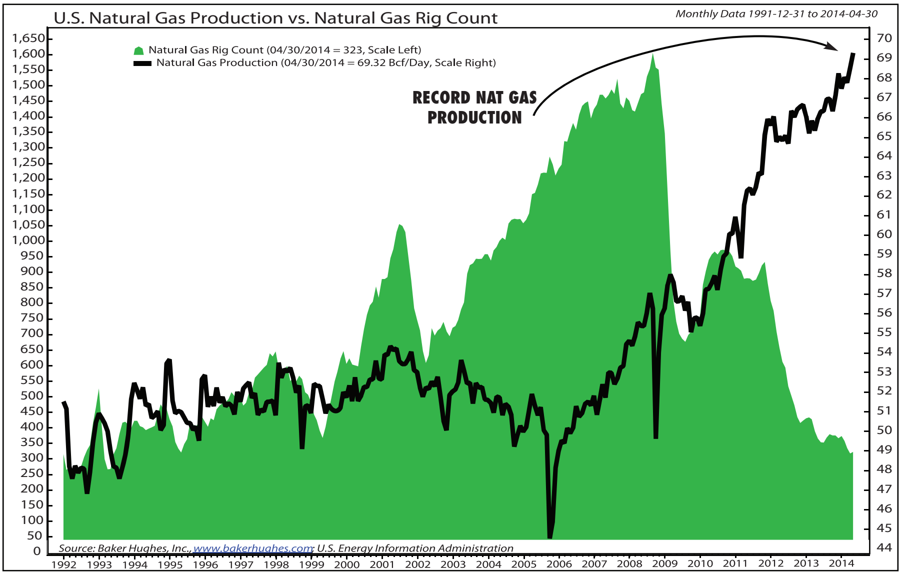

Source: Baker Hughes, Inc., www.bakerhughes.com; U.S. Energy Information Administration

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FIGURE 7.36 **U.S. NATURAL GAS PRODUCTION VERSUS NATURAL GAS RIG COUNT**

of daily production could be shipped from U.S. shores. The White House, in a commissioned 2013 report, stated that exports would have little impact on U.S. natural gas prices. We are skeptical.

On the positive side, the United States is efficiently producing oodles of natural gas. Gas producers should be able to offset much of any incremental new demand from exports with extra supply, at least for a time. The United States produces roughly 69 billion cubic feet per day of natural gas (Figure 7.36, black line) with only 323 gas rigs (green section).

CONCLUSION

New oil and natural gas finds have helped the United States move away from its reliance on foreign oil. Since most oil is used in transportation, encouraging the use of alternative-fuel vehicles, particularly electric cars, is crucial to complete the transition. Building a nationwide recharging infrastructure will take time, but if it is accomplished and electric vehicles become the norm, U.S. energy independence will be a reality.

About the Author

NED DAVIS

SENIOR INVESTMENT STRATEGIST

Ned Davis founded Ned Davis Research Group (NDRG) in 1980. Ned has been professionally involved in the stock market for over 40 years. While arguing that forecasting reliably ("being right") is impossibly difficult, he espouses a philosophy that he feels can consistently win ("make money") through a *disciplined* strategy of following the weight of *objective* indicator evidence. Because he also believes *flexibility* (ability to adapt) is crucial, NDRG also produces many sentiment indicators warning investors to be wary at crowd extremes and helping them to be open-minded about potential trend changes. A self-proclaimed risk manager, Ned dedicates his research to avoiding major mistakes, cutting losses short, and letting profits run.

Ned is the author of *Being Right or Making Money* and *The Triumph of Contrarian Investing*. He has been the subject of numerous featured interviews in *Barron's* and has been a featured guest many times on the late Lou Rukeyser's *Wall $treet Week*. NDRG is widely quoted by various media and Wall Street sources.

Ned is a Phi Beta Kappa graduate of the University of North Carolina at Chapel Hill. He attended Harvard Business School.

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Loren Flath is a senior research analyst who works directly with Ned Davis. He joined Ned Davis Research in 1984; since then, Loren has been director of research, founding director of the company's information technology department, and founding director of data and special projects.

Loren specializes in the development of unique approaches to stock market research, which he employs in the construction of many of NDRG's major models. He has been instrumental in building the company's IT department, from hardware platforms to software development and operating systems. He has been a key contributor to developing the company's various proprietary programming languages as well as its primary research tool, Technalyzer.

Loren received his bachelor of science from Western Michigan University and his master's degree from the University of Michigan.

ALEJANDRA GRINDAL

SENIOR INTERNATIONAL ECONOMIST

Alejandra Grindal is the senior international economist for NDRG. She is the primary person in charge of the firm's international Macro Insights product and is responsible for identifying international economic trends and themes, particularly as they relate to developments in equity, fixed income, and currency markets. In recent years Alejandra has been particularly focused on global demographics, the European sovereign debt crisis, and Japan's Lost Decade. She joined NDRG in 2006.

Alejandra writes several Macro Insights publications for NDRG, including *Global Economic Comment* (a quick, high-frequency publication featuring analysis on the market from the perspective of the global economy) and *Global Economic Outlook* (a more comprehensive look at the global economic developments impacting the markets). Alejandra has also written several Special Report and Trends & Themes publications, each edition of which is devoted to an in-depth analysis and discussion of a single topic of interest.

Alejandra is a member of the National Association for Business Economics. She is a frequent speaker at professional and investment conferences and her work has been cited in the financial media.

Prior to joining NDRG Alejandra taught microeconomics and macroeconomics at Florida State University while pursuing her graduate studies, and then worked as a full-time professor at Santa Fe College and Edison College. Alejandra also worked at the British Parliament as a research assistant, where she participated in policy and constituent research and campaign marketing.

Alejandra received her master's degree in economics and a bachelor of science in economics and international affairs, with summa cum laude and Phi Beta Kappa distinction, from Florida State University.

JOHN E. LAFORGE

COMMODITY STRATEGIST

John E. LaForge leads NDRG's Commodity Team, which provides research across the commodity spectrum, including equities. The team covers the most widely followed energy, metal, agricultural, and soft commodities and equities, providing both commentary and strategy. Commodities and commodity equities are global in nature and sensitive to economic realities, so John works closely with all of NDRG's other strategy teams.

John has over 17 years of investment experience, primarily in asset management. Almost eight of those years were spent managing $1.2 billion across seven mutual/hedge funds under multiple client platforms for

Phoenix Investment Partners before becoming chief investment officer of SRQ Capital Management in 2005.

Over the course of his career John has been a frequent contributor to the media, including CNBC, Bloomberg, and many print media publications. John earned a bachelor of science in finance and master of business administration from the University of Tampa.

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